JANUARY 11, 1954

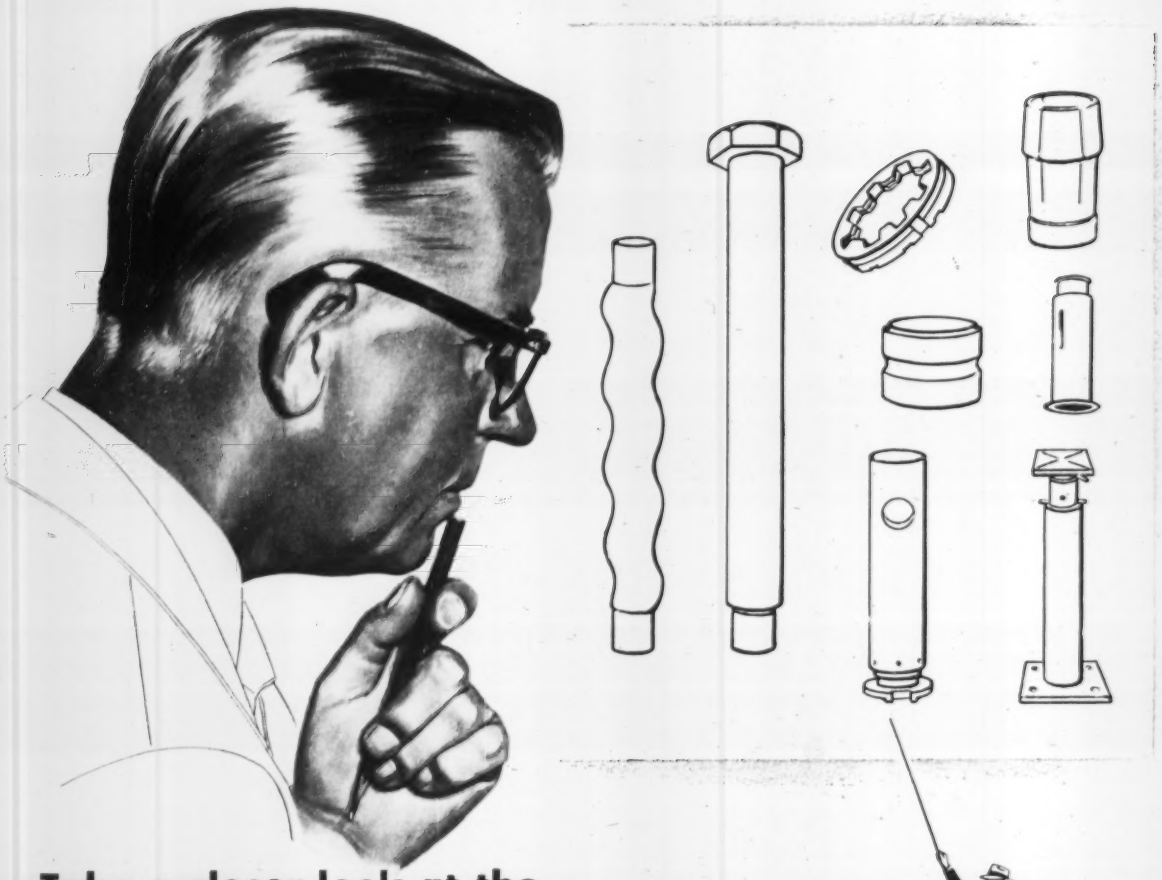
STEEL
THE WEEKLY MAGAZINE OF METALWORKING

More Machinable Steels

Boost for the High-Speed Cutting Team — page 70

✓ GOOD STOCKS FOR COMPONENTS
In Best Shape Since 1950, p. 29

CONTENTS — PAGE 5



Take a closer look at the

ADAPTABILITY

of B&W mechanical tubing *You'll like it*

It would be difficult indeed to name any round hollow part or structural assembly that can't be *machined* or *formed* out of B&W Mechanical Tubing – at worthwhile economies in time, costs and materials. It will pay you, as it has so many others, to look into its great versatility and the opportunities it affords for cutting production expense and improving product quality.

B&W Mechanical Tubing—both seamless and welded – is available in stainless, alloy and carbon steels, in tempers, grades, finishes and sizes to suit any needs.

Call on Mr. Tubes – your nearby B&W Tube Representative – if you want help in determining the mechanical tubing best suited to your needs. Get the benefit of his long, close association with mechanical applications of all kinds to help you cut costs while keeping production high.

B&W SEAMLESS and WELDED TUBES

THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

TA-1747(M)

FOR MEDICAL RESEARCH . . . This new building in West Los Angeles will provide 710,000 sq ft of additional floor space for medical research at the University of California at Los Angeles. It is designed to carry extra floors when future expansion becomes necessary. Architects are Welton Becket and Associates. Structural engineers: Murray Erick Associates. General contractor: Robert E. McKee. Bethlehem Pacific fabricated and erected the 3,987 tons of steelwork.

Steel for Western Construction

Bethlehem Pacific has complete facilities for fabricating reinforcing bars and structural steel . . . and sells the most complete line of steel construction materials in the West.

• • •

$6,700,000 ELECTRONICS BUILDING . . . 2200 tons of Bethlehem Pacific reinforcing bars are going into the new five-story electronics building at the Mare Island Naval Shipyard at Vallejo, Calif. In the section of the building shown, about 50 columns are being built in an area 200 ft by 168 ft. General contractors in this joint venture are Grove, Shepard, Wilson & Kruge of California, Inc., and Fred J. Early, Jr. Co., Inc., both of San Francisco. Steelwork is to be fabricated and erected by Bethlehem Pacific.

BETHLEHEM PACIFIC COAST STEEL CORPORATION

Sales Offices: Los Angeles, San Francisco, Portland, Seattle, Spokane

BETHLEHEM PACIFIC

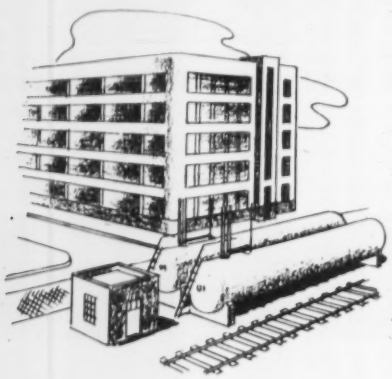
BETHLEHEM STEEL

Phillips 66

Philgas*

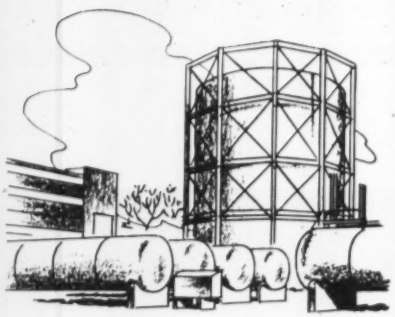
THE ALL-PURPOSE FUEL

For Industries



Philgas, a clean, high-quality LP-Gas, is being used by leading industries for heat treating, mold drying, core baking, ceramic firing and many other operations. Philgas butane-propane systems are automatic, cutting down on overhead while assuring constant furnace temperatures, atmospheres, and pressures.

For Utilities



Free from harmful contaminants, Philgas is used by many progressive utilities to augment supplies of natural or manufactured gas. Cleanliness, uniformity, constant pressures (high or low) and easy automatic operation make Philgas a *superior* product. It's America's largest selling brand of LP-Gas.

*Phillips *66* and Philgas are the Phillips Petroleum Company trademarks for its high quality propane-butane LP-Gas or bottled gas.

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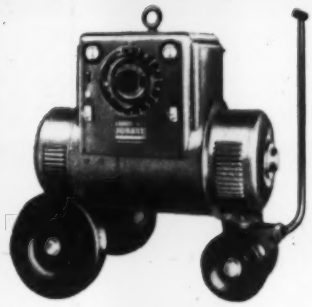
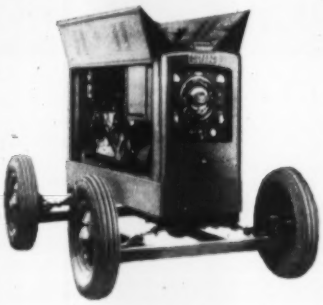
Sales Department **Bartlesville, Oklahoma**

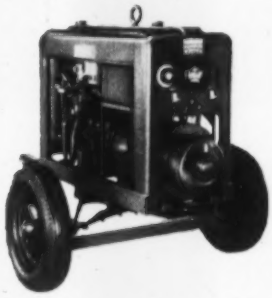
Offices located in Amarillo, Tex., Atlanta, Ga., Chicago, Ill., Denver, Colo., Des Moines, Ia., Pontiac, Mich., Indianapolis, Ind., Kansas City, Mo., Milwaukee, Wis., Minneapolis, Minn., New York, N. Y., Omaha, Nebr., Raleigh, N. C., St. Louis, Mo., Tulsa, Okla., Wichita, Kan.



Electric Drive Welders. Ideal for production, maintenance and repair welding, in both large and small plants. 200, 300, 400 and 600 amp. models.



Gas Drive Welders. Used in the field where electric power is not available. 1, 3 or 12 KW auxil. power outlets. 200, 300, 400, 600 amp. models.

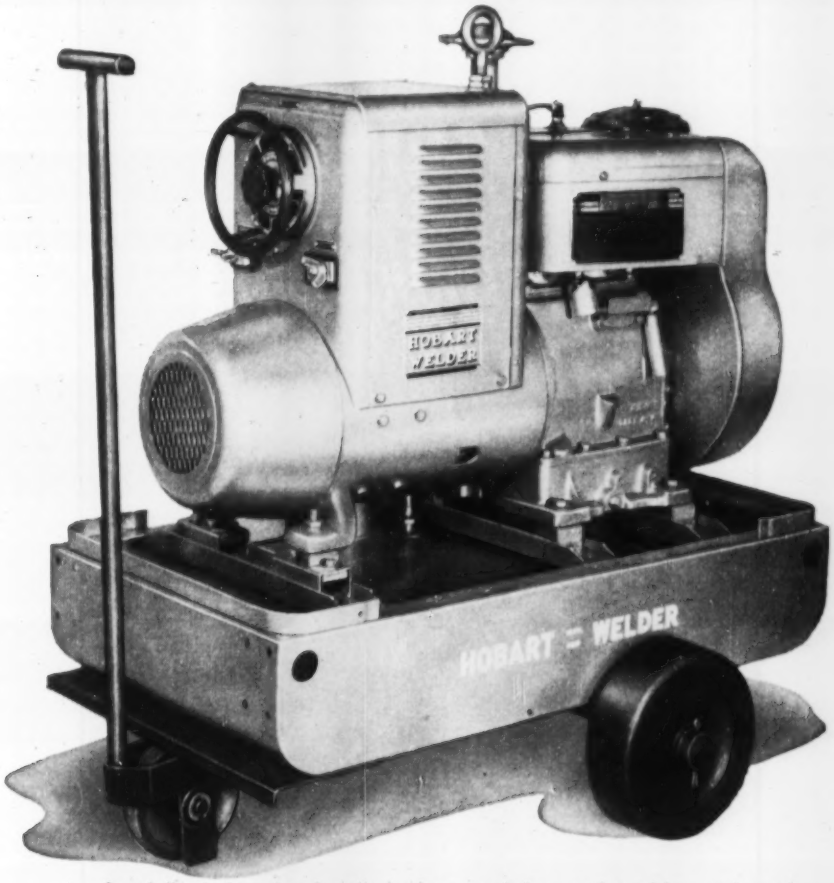


"Pipeliner" Welder. A 250 amp. Gas Drive model that's light and compact—yet has plenty of engine power and a hot, fast, dependable arc.

Make your own comparison

Try Hobart Electrodes on your work to actually see the difference. Convince yourself of their superiority. Just tell us the type work you are doing and we'll send you FREE samples that your men can try. Mail coupon today!

The neatest package of welding energy you ever saw. This 200 amp. **Hobart "Husky Boy" air-cooled engine driven welder** has plenty of copper **(not skimped).** Gives you rapid and strong welds at lower cost. **Light but rugged** and compact. **Welds anywhere!**



Specially designed to handle both general shop and outside repair work, the "Husky Boy" is a real profit-maker. Mail coupon today for full details.

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Phone 21223—"One of the world's largest builders of arc welders"

FREE

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HOBART BROTHERS COMPANY, BOX ST-14, TROY, OHIO

Without obligation, please send complete information on items checked below.

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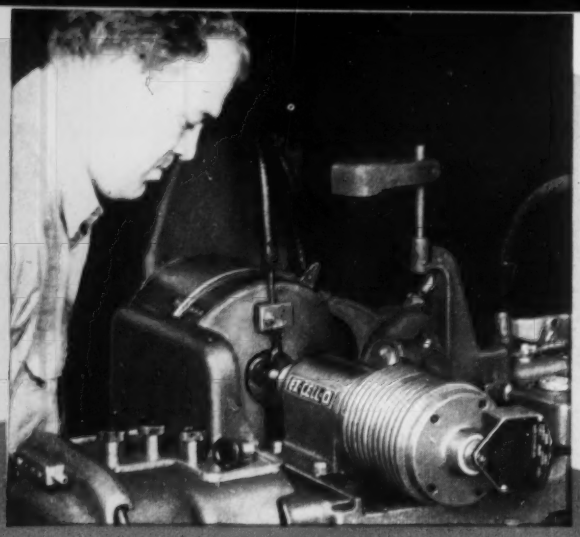
☐ "Pipeliner" Welder Send me ☐ Electrode Catalog ☐ Accessory Catalog
☐ FREE Electrode Samples. Our work is _____

NAME _____ POSITION _____

FIRM _____

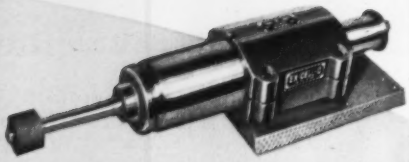
ADDRESS _____



Grinding small holes with an Ex-Cell-O 25,000 RPM High Frequency Motorized Spindle

PRECISION SPINDLES

Built for Your Work

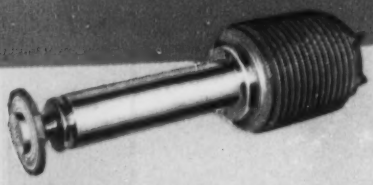


Single-body, belt-driven internal grinding spindle.

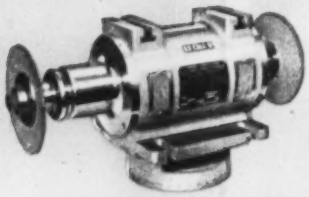
Double-body, belt-driven internal grinding spindle.

25 hp heavy duty precision spindle with 24" grinding wheel.

25,000 rpm high frequency inbuilt motor spindle.



Totally enclosed inbuilt motor surface grinder spindle.



Precision inbuilt motor spindle for cutter grinder.

Heavy duty motorized precision spindle available up to 20 hp

Get the most from your precision grinding operations by using the Ex-Cell-O Spindle that's made especially for the job.

Ex-Cell-O Precision Spindles have long been the original equipment choice of leading grinder manufacturers. They are rigid and smooth-running. For high precision work they are fitted with standard Ex-Cell-O Precision Ball Bearings; for slower speeds and heavier cuts they are equipped with heavy-duty Ex-Cell-O Precision Ball Bearings. They require no lubrication or adjustment. Phone your Ex-Cell-O representative or write to Ex-Cell-O in Detroit today for catalog 25962 listing hundreds of standard grinding spindles.

XLO

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53-32

This Week in Metalworking

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

Vol. 134 No. 2 January 11, 1954

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

Metalworking Outlook 21

As the Editor Views the News 25

Windows of Washington 36
Washington Editor E. C. Kreutzberg keeps tab on doings in agencies of the federal government

Mirrors of Motordom 43

The Business Trend 47

Men of Industry 51
Here, in a popular feature of STEEL, is news about men who make industry tick

Technical Outlook 69

Metallurgists Offer Cutting Tools a Bigger Bite 70
Improving the machinability of steels is a big item on steelmakers' agenda. Customers are happy

Trial Technique for Quality Control 74
Engineers tried the system out on random machines before management gave the final ok. Here's how they did it

Progress in Steelmaking 77
Conditions Favor Six-Electrode Furnace—That's the conclusion of a key paper at Electric Furnace Conference

New Products and Equipment 81

Get the Most Out of Cold Heading 92
If you're confining your cold heading to making of fasteners, you're missing some of the possibilities

Poor Welds Can Start Brittle Fracture 100
To prove it, look what happened at an English refinery where defects and faulty repairs led to failure

The Market Outlook 102
Nonferrous Metals 108
Metal Prices and Composites begin on Page 103

Behind the Scenes	6	Obituaries	56
Letters to the Editors	10	Helpful Literature	85
Foreign News	39	Calendar of Meetings	97

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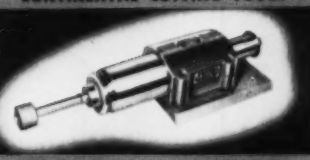
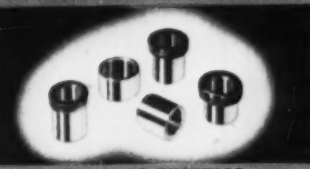
XLO
EX-CELL-O for PRECISION

PRECISION MACHINE TOOLS

CONTINENTAL CUTTING TOOLS

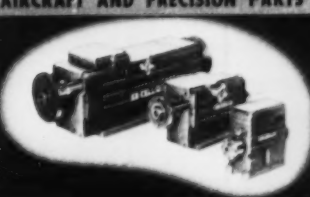


PRECISION GRINDING SPINDLES



DRILL JIG BUSHINGS

AIRCRAFT AND PRECISION PARTS



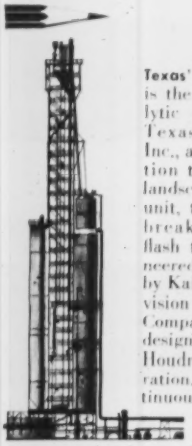
HYDRAULIC POWER UNITS

Products of
EX-CELL-O
CORPORATION
DETROIT 32, MICHIGAN
51-18

(Advertisement)

what's NEW in Engineering

An ingenious new alarm system which automatically sounds a warning when overloaded industrial equipment gets too hot, is said to be the answer to the problem of having to feel bearing cases and check thermometers scattered over a wide area. The moment a motor gets "too darn hot", a bulb lights up, and a central monitor gives out an audible alarm.



Texas' newest landmark is the Houdriflow catalytic cracking unit of Texas City Refining, Inc., a spectacular addition to the southwest landscape. The cracking unit, together with visbreaker and vacuum flash tower, were engineered and constructed by Kaiser Engineers Division of Henry J. Kaiser Company from the basic designs prepared by the Houdry Process Corporation. A new-type continuous bulk handling system for fresh catalyst and a new, centralized control system were also designed and built by Kaiser Engineers' process specialists.

To be published January 1, 1954 by McGraw-Hill is the Third Edition of **Formulas for Stress and Strain** by Raymond J. Roark, Professor of Mechanics, University of Wisconsin. This thorough revision of a working handbook for engineers concerned with machine and structural design contains a summary of important formulas, facts and principles pertaining to strength of materials.

An indication of Kaiser Engineers' activity is the fact that more than 6,000,000 miles have been flown by key personnel, staying in touch with far-flung activities in widely diversified engineering fields. When you have a problem in design, engineering or construction, call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

behind the scenes

1954 Program for Management

Your enthusiastic acceptance of our 1953 Program for Management series has encouraged our editors to continue it into this year. Basic research and preparation are now being done on ten additional articles of this type to be published monthly during 1954.

The idea behind the series is to give penetrating and specific information on the most important problems currently facing metalworking management. Each article in the series represents many man-hours of study and planning by editorial task force units.

The 1954 Program for Management series, we are told, is predicated on the expectation that this year will enjoy a continuing high-level economy, although it will be slightly lower than 1953. The slight dip in volume with the increased metalworking capacity and the freedom from artificial controls and other restraints on production indicate an intensely competitive economy. The return to competition will be real.

"The 1954 series," says Walter Campbell, STEEL's managing editor, is designed to aid metalworking executives adjust to a high-level competitive economy." It will include ten articles; the subject of each was touched on in the provocative *Metalworking Yearbook* editorial "Compass for Competition" which you read last week. Here, more specifically, are the ten subjects and tentative dates of publication:

Feb. 22—Strengthening the Sales Effort

March 22—Training Management Men

Apr. 19—Automation—How Automatic Should We Get?

May 17—Regularizing Production and Employment

June 21—Distribution—Integration with Manufacturer

July 19—Distribution—Training Personnel

Aug. 23—Distribution—Transportation

Sept. 20—Diversification—Introduction of New Products

Oct. 11—Foremen—Bridge to More Efficient Production

Nov. 22—Product Design

We now have in our editorial files a section labeled "Love Letters." These, as you may have guessed, are complimentary epistles received from you folks who read STEEL each week. It was the flattering heft of the Program for Management folders in this "Love Letter" file which prompted our editors to undertake the above.

Please continue to let us know when we're giving you material you like. But, for Shrdlu's sake, don't forget to tell us when we're dragging our feet!

Was Horace Greeley Correct?

In recent weeks our Marketing Research Department has been asked a certain question with increasing frequency. Very simply stated the question is, "Can you estimate for us the broad sales potential for industrial goods in the western United States?"

Well, it's a query which sooner or later crops up in the thinking and planning of every company that markets goods on a national scale. Because many of you readers may have current need for an analysis of this sort, we asked Newman Ladabouche, STEEL market research manager, to let us relay his findings to you.

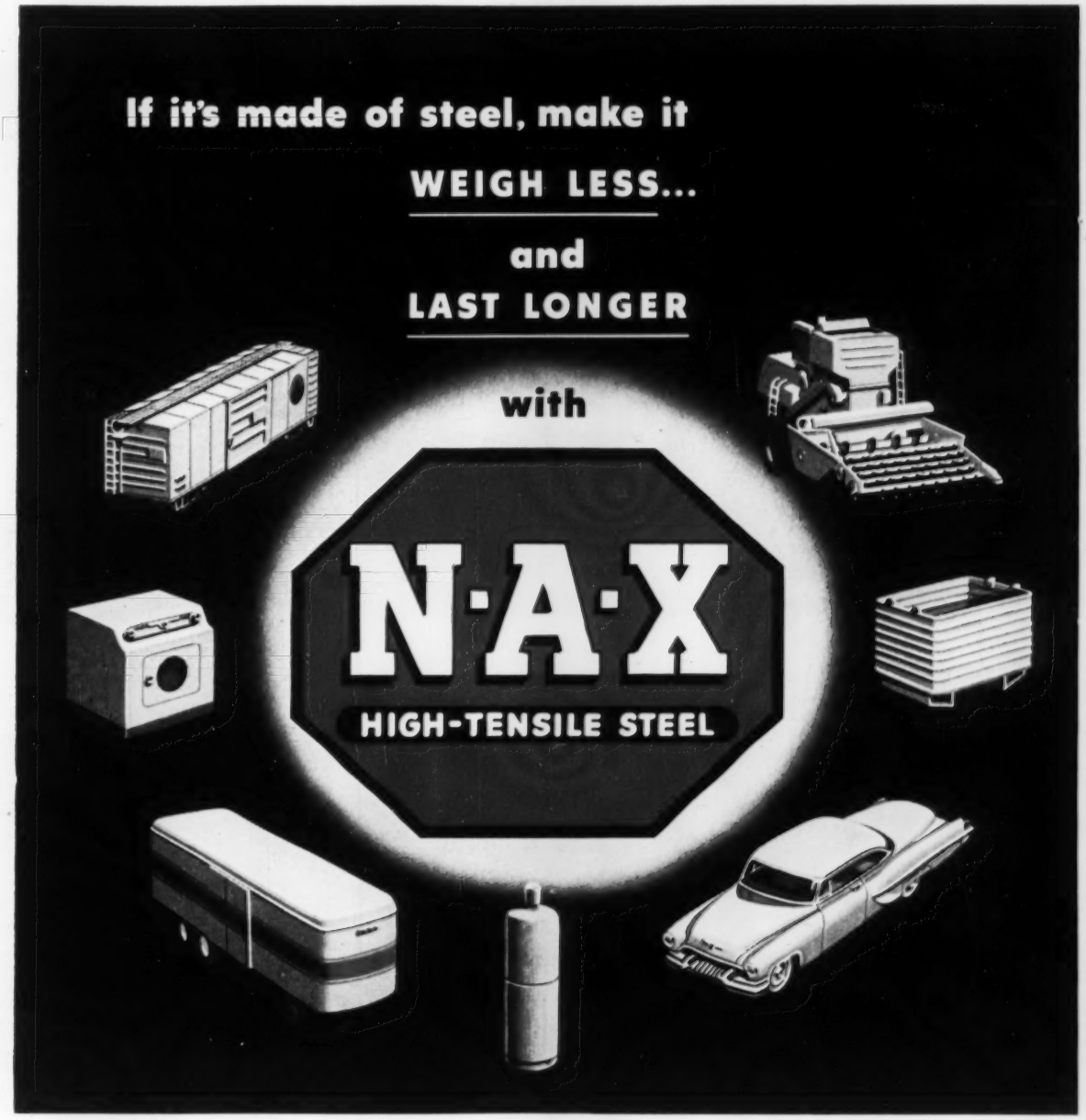
Ladabouche made a very simple yet dramatic comparison of the eleven western states and the state of Ohio. He found these facts to be true:

	Per Cent of U.S. Total	
	11 Western States	Ohio
Metalworking plants employing 20 or more	9.4	10.8
Hagstrom's Industrial Trading Area index	8.1	7.9
Expenditures for new equipment and machinery: 1951	10.1	10.3
Number of employes in manufacturing establishments (Av. for year 1951)	8.6	8.3

We had the idea that perhaps the above might be just the measuring stick you have been seeking to help you determine whether or not your sales efforts in the West are in balance with the potential represented by this sprawling market.

Shrdlu

(Metalworking Outlook — Page 21)



You can design light weight, longer life, and economy into your products by including N-A-X HIGH-TENSILE in your plans.

It is 50% stronger than mild steel.
It is considerably more resistant to corrosion.
It has greater paint adhesion with less undercoat corrosion.
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It has greater resistance to abrasion or wear.
It is readily and easily welded by any process.
It polishes to a high lustre at minimum cost.

And with all these physical advantages over mild carbon steel—it can be cold formed as readily into the most difficult shaped stamping.

Sound like something for you? Ask for full facts and think of N-A-X HIGH-TENSILE when you re-design.

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N-A-X Alloy Division — Ecorse, Detroit 29, Michigan

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Once again!...

Jacobs doubles

production rate—gets the

"TOUCH of GOLD"

Leading chuck manufacturer uses Norton machines to cut grinding time in half

When a leader like The Jacobs Manufacturing Company selects equipment, you can be sure that this equipment has had careful study from every angle of performance and cost.

That's why Jacobs' choice of Norton grinding machines is worth serious consideration when *you* are buying grinding machines.

In producing their famous Rubber-Flex Collets, for example, Jacobs reports that switching from separate operations to a single operation on Norton Type CTU Semiautomatics with multi-wheel mounts has doubled their production rate. *Jacobs reported similar production savings in grinding chuck bodies on the same type of Norton machines.*

Another manufacturer has boosted production from 300 to 600 parts per hour by grinding 2 diameters at once on a Norton machine. Still another reports that a Norton grinding machine with a triple-wheel mount has upped his production rate 128%. Throughout industry, manufacturers are using Norton grinders and lappers to provide the "Touch of Gold" that means time, work and money saved in grinding operations.

The "Touch of Gold" in Your Own Grinding

means the same profit-increasing advantages. And remember: only Norton offers you such long experience in both grinding wheels and machines to assure this "Touch of Gold" that helps you produce more at lower cost.

For further facts, see your Norton Representative, or write us direct. NORTON COMPANY, Machine Division, Worcester 6, Mass. *In Canada:* J. H. Ryder Machinery Co., Ltd., Toronto 5.

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NORTON

GRINDERS and LAPPERS

Making better products... to make other products better

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The "Touch of Gold" at Jacobs. One of the Norton 6" Type CTU Semiautomatic Grinding Machines used by The Jacobs Manufacturing Company of West Hartford, Connecticut, to grind metal inserts in the famous Rubber-Flex Collets. The basically fast action of this Norton grinder, the multi-wheel mount, special swivel table arrangement and wheel-truing device provide a single setup for traverse and shoulder grinding operations that boosts production rate 100%.

don't settle for less

...or you may have to settle with your customer!

pack it right the first time *in an H & D Hevi-Duty Box**

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*Patent Applied For

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Authority on Packaging

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LETTERS
TO THE EDITORS

Calling the Plays in '54

I would like to know where I can obtain a copy of the survey conducted by the F. W. Dodge Corp., taken from a poll of 129 leading economists on industrial activity in 1954 as discussed in your editorial "New Quarterback in '54" (Dec. 7, p. 81).

F. M. Gibboney
treasurer
Rotary Electric Steel Co.
Detroit

• *Write to F. W. Dodge Corp., 119 W. 40th St., New York 18.—ED.*

Intriguing Chrome Story

I was very much intrigued by your article "Putting Chrome on Ferrous Surfaces" (Dec. 7, p. 160), especially when reading about the wiping dies for forming 430 stainless.

I would appreciate your sending me the complete address of the author of that article, Richard L. Wachtell, Chromalloy Corp., New York.

Harold Farson
method engineer
Marion Industries
Marion, O.

• *That address is: Richard L. Wachtell, technical director, Chromalloy Corp. of New York, 109 W. 64th St., New York 23.—ED.*

Marketing Research Defined

Will you send me a tear sheet of your article "Marketing Research" (Dec. 7, p. 125), No. 10 in STEEL's Program for Management?

I read the article at our Pratt Library and find it to be most interesting.

N. Dana Lovell
Davison Chemical Corp.
Baltimore

• *Sent.—ED.*

I think you have done an excellent job in your article "Marketing Research" and it should be very useful for reference material.

Vergil D. Reed
vice president
J. Walter Thompson Co.
New York

We want you to know that your very excellent article "Marketing Research" will be called to the direct attention of Norton Co.'s management because it includes succinct definitions and statements that are not usually aptly put.

You will agree with me that one of the most important problems is to define the exact niche that marketing research should occupy in general management. Unless this definition is precise, understood and recognized, the effectiveness of market research will be impaired.

The writer personally feels that the accepted title of today, marketing research, is limiting, for a good deal of research performed by the organization of the type we are discussing involves much more than research in marketing. We choose to call our division "Business Research."

Let me congratulate you on fashion-

Please turn to p. 12

Latrobe's new high speed steels

with

"Built-in" sulphide lubricants

assure

lower cost through higher production

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LETTERS

Concluded from p. 10

ing an excellent article. If a half-dozen tear sheets are available, they could be used to advantage.

M. N. Smith
business research manager
Norton Co.
Worcester, Mass.

• *Sent.—ED.*

I consider your article "Marketing Research" to be particularly well done.

We would like to make this article available to our seniors in the marketing research courses. However, we have only one copy of STEEL which is maintained in the library.

Therefore, I wonder if you would supply us with six tear sheets of this article so that we may make them available for circulation among the classes.

Frederick T. Bryan
chairman of marketing department
Boston College
Chestnut Hill, Mass.

• *Sent.—ED.*

The book, *Making Your Sales Figures Talk* by C. W. Smith, was mentioned in your article "Marketing Research". Would you be kind enough to tell us where this book can be obtained?

Howard Bourner
chief engineer, design
Temco Inc.
Nashville, Tenn.

• *We suggest you write directly to C. W. Smith, McKinsey & Co., 60 E. 42nd St., New York 17, concerning his book, "Making Your Sales Figures Talk."—ED.*

Tests for Steel Products

In your article "Mechanical Testing Is Standardized" (Aug. 31, p. 75), there is a reference to an American Society for Testing Materials publication on mechanical testing of steel products. We would like to get the full name of that publication so that we may order it.

W. E. Fuller
information officer
British Steel Castings Research Association
Sheffield, England

• *It's called "Tentative Methods and Definitions for Mechanical Testing of Steel Products," ASTM designation—A370-53T.—ED.*

For Steel Mill and Product

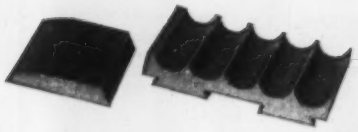
Can you tell me where I can get a directory of steel producers that gives a brief description of the products each plant produces?

I would also like to know if this same source of information would indicate which mills are integrated.

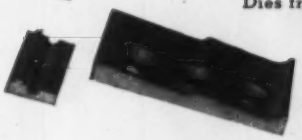
The descriptions of products I have in mind are very brief summaries such as pipe, sheets, shapes, etc.

J. F. Van Dam
divisional production manager
Peerless Pump Division
Food Machinery & Chemical Corp.
Los Angeles

• *Write to the American Iron & Steel Institute, 350 Fifth Ave., New York 1, for a copy of "Directory of Iron & Steel Works of the United States and Canada," which was last published as of Jan. 1, 1951. The institute is revising the directory, but the new edition will not be out probably until the latter part of 1954.—ED.*



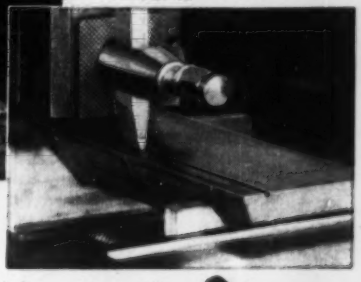
Form Tools



Dies from Templates

Facing 90° shoulders

Duplicating a Cam



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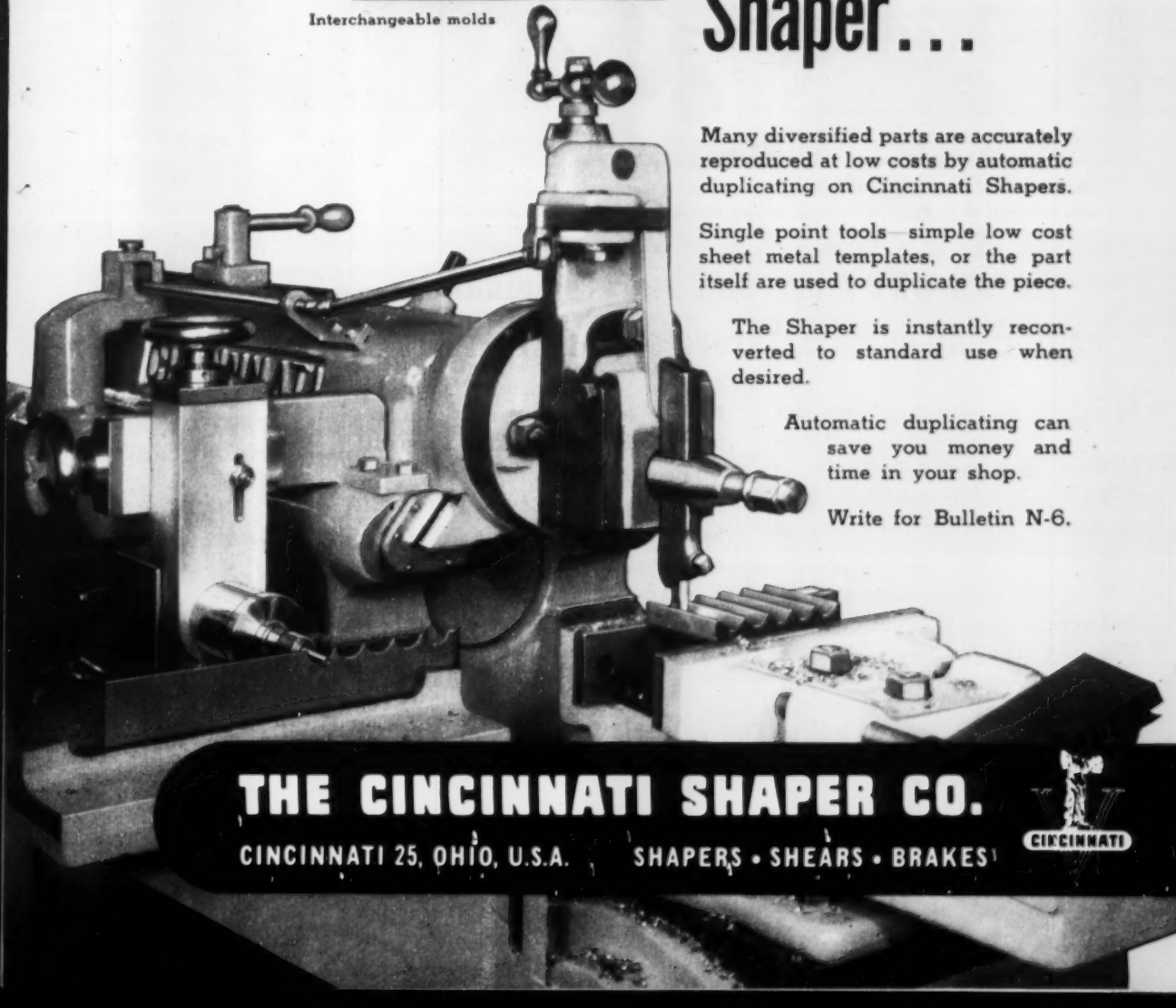

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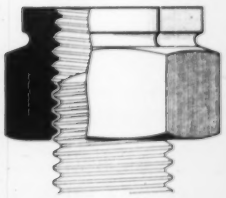
Manufacturers of couplings like these find that FLEXLOC Self-Locking Nuts provide faster assembly and safer, more dependable locking than is afforded by most other methods.

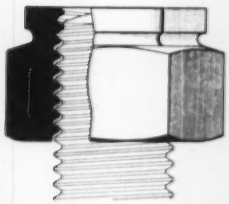
Here's why more and more original equipment manufacturers specify FLEXLOCs

Whether it's on power transmission couplings or on access doors of helicopters, more and more FLEXLOC Self-Locking Nuts are being used to insure positive fastening of assemblies.

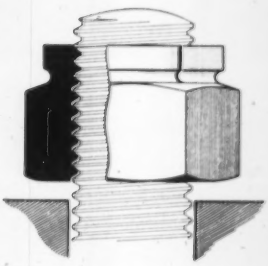
There are many reasons for this. FLEXLOCs reduce production costs. They are easy to install. They are one piece, all metal—nothing to assemble, come apart, lose or forget. They eliminate complicated, time-consuming methods of locking bolts and studs. They stay put—once their locking threads are fully engaged, they won't work loose. They are easy to get—SPS can make prompt delivery of FLEXLOCs in any quantity, and in a wide range of sizes, through a national organization of industrial distributors. Write for literature and samples. STANDARD PRESSED STEEL CO., Jenkintown 33, Pa.



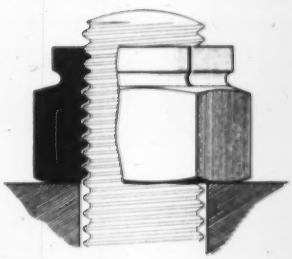
Starting. A FLEXLOC starts like any ordinary nut. Put it on with your fingers. Tighten it with a standard hand or speed wrench.



Beginning to Lock. As the bolt enters the segmented locking section, the section is expanded, and the nut starts to lock.



Fully Locked As a Stop Nut. When 1½ threads of a standard bolt are past the top of the nut, the FLEXLOC is fully locked. A FLEXLOC does not have to seat to lock.



Fully Locked As a Seated Nut. When it is used as a lock or stop nut, the locking threads of the FLEXLOC press inward against the bolt, lifting the nut upward and causing the remaining threads to bear against the lower surface of the bolt threads. Vibration will not loosen a FLEXLOC, yet there is no galling of threads.

FLEXLOC® LOCKNUT DIVISION

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JENKINTOWN PENNSYLVANIA

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FIRST HIGH-SPEED, LOW-COST PROCESS OF COLD FORMING AND WELDING

NON-FERROUS TUBING

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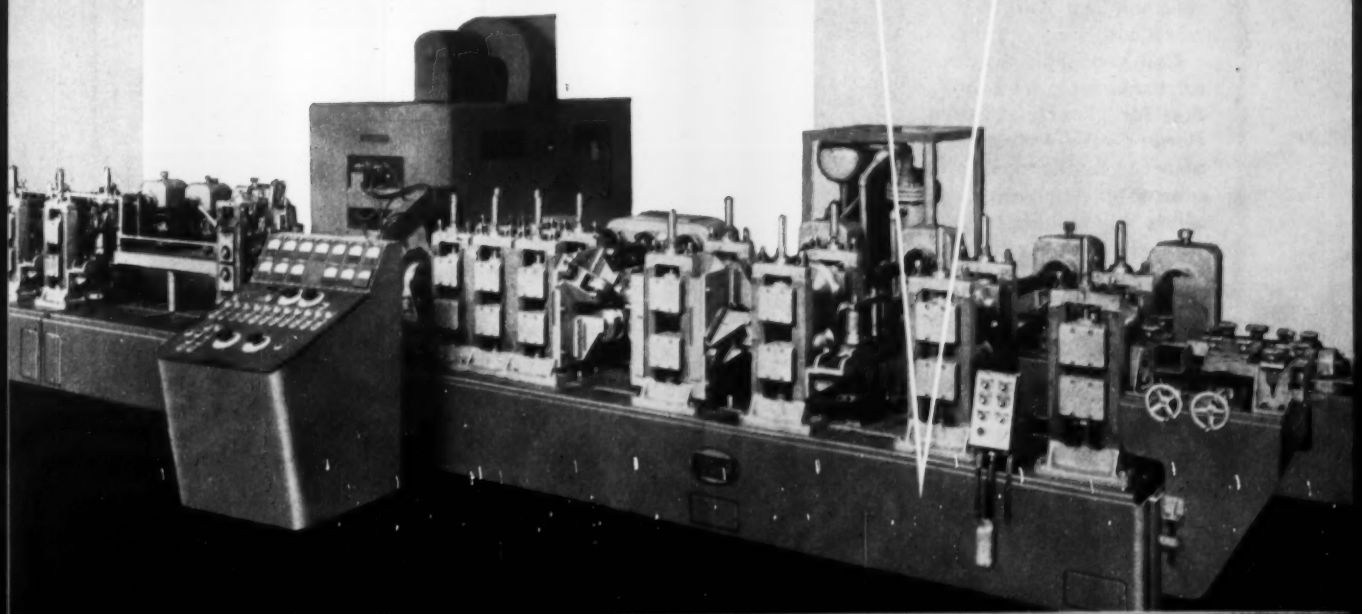

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BULLARD

The Invisible Background of Industrial Progress

To fully enjoy Nature's Winter Wonderland, it is necessary that the nation's snow-covered highways be kept open to traffic. Winter sport enthusiasts respond to the "call of the open road" to participate in skiing, skating, ice fishing, tobogganing, ice boating and hunting, to mention just a few. Commercial traffic depends on these same highways to move raw and finished materials, goods and products, from plant to consumer.

Manufacturers of highway snow-removing equipment, such as trucks, snowplows and bulldozers, have recognized that Bullard Machine Tools are highly efficient manufacturing units—a testimonial that *Modern Machine Tools* are truly "The Invisible Background of Industrial Progress."

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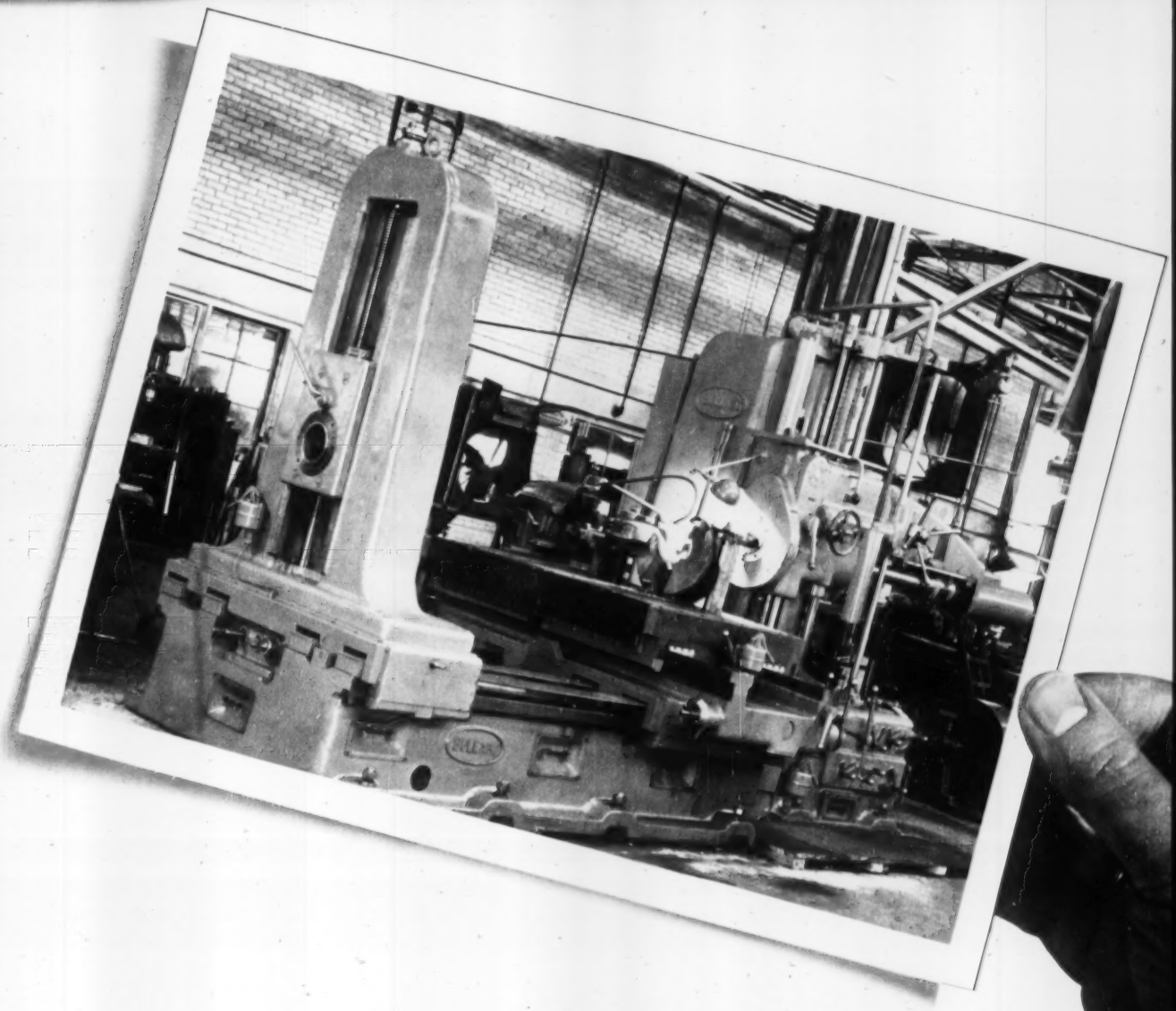

With constant demand on the part of industry to improve productivity at a lower cost specify Bullard 4-Way Bed Horizontal Boring, Milling and Drilling Machines and invest in profits through manufacturing efficiency. This modern machine tool is designed and built to provide rigid support with the heavily constructed table permitting the machining of heavier work pieces with a higher degree of maintained accuracy.

Long life is also assured through heavier box-type saddles, anti-friction extension bar support in the heavier rear post and motor-driven lubrication pump for the gear box.

For a complete story on the Bullard 4-Way Bed, 4 inch or 5 inch spindle, Horizontal Boring, Milling and Drilling Machines, call in your nearest Bullard representative or write to The Bullard Company, 286 Canfield Avenue, Bridgeport 2, Connecticut, or phone 6-2511.

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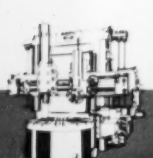

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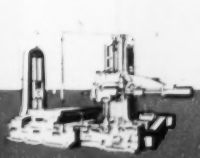

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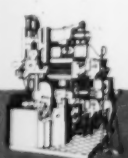

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When you're really "in the soup"...

In weather like this, flying is no fun.

Visibility is *zero*. Your storm-lashed plane rocks and shakes as it beats into the blackness.

You rely on the pilot. And he relies on instruments — delicate mechanisms, every one of them — to bring you in to a safe landing.

How high? How low? How fast? How slow? The answers are all on the dials. The answers are accurate, too, because modern instruments are well protected from damaging vibration by devices called "shock mounts."

Shock mounts fashioned of conventional cushioning materials are satisfactory up to a point, but they were never perfect in every way.

Under constant vibration, some have a tendency to pack down and lose resiliency. Others are at the mercy of heat and cold . . . pick up dust, oil and moisture . . . or are attacked by bacteria and fungi. Obviously, something better had to be found.

A kitchen pot cleaner of knit Monel® mesh finally put searchers on the right track. The Metal Textile Corporation knitted it with different types and thicknesses of Inco Nickel Alloy wire . . . stretched it . . . compressed it . . . subjected it to test after test.

Knit metal mesh had none of the faults of its forerunners. Even when compressed, it retained a high degree of resiliency, for the knitted loops acted like thousands of tiny springs. Here at last was the answer!

Today, knit metal mesh that traces its origin to a pot cleaner, serves on many jobs once handled not nearly so well. In addition to shock mounts, knit metal mesh is found in air filters on carburetors, and as padding on pressing machines. It's used for straining and filtering fluids and gases — and RF, Shielding of electronic components.

Just let your own imagination run. With Monel wire you have a strong, non-rusting mesh structure that resists shock and impact, heat and cold, wear and corrosion. With other Inco Nickel Alloys, you can add extra strength, if that is needed, or electrical or thermal conductivity, or other desired properties.

Have you a metal problem that's really got you "in the soup"? Then bring it to us. We're always glad to help you find a solution. All you need do is write: The International Nickel Company, Inc., 67 Wall St., New York 5, N. Y.

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Metalworking Outlook

The Guaranteed Wage and IUE

The guaranteed annual wage will be the major demand by the CIO electrical workers when negotiations start in April with General Electric Co. and Westinghouse Electric Corp. GAW will probably be left open with other companies with whom the IUE is bargaining until the matter is settled with the two pacesetters.

Toward Union Merger?

The CIO and AFL have signed a no-raid pact which technically went into effect Jan. 1. But in practice the earliest it can be effective is in February. That's because, to become valid, the 110 affiliates of the AFL and the 35 CIO unions must also sign the pact, and it will take a while to get everybody lined up. There's the suspicion that a few of the unions will balk, notably Dave Beck's teamsters. If all the unions do sign, many labor observers see it as a major step toward AFL-CIO merger. However, a number of hurdles must still be jumped for that development. The no-raid agreement is highly limited in scope, is in force for only two years and is dependent upon the goodwill of all participants to be successful.

Coming: More Freight Cuts

Watch for still more reductions in rail freight rates on steel products in the battle by railroads to compete with truckers. Eastern railroads held a public hearing in Pittsburgh on their proposal to pare charges 18 to 20 per cent. The hearings were held to enable the Traffic Executive Association-Eastern Railroads to decide whether formally to seek lower rates from the Interstate Commerce Commission.

New Steel Pricing Trend?

Dolan Steel Co. Inc., Bridgeport, Conn., distributor of cold-rolled, low-carbon strip, is quoting net delivered prices to consumers' plants. The system eliminates the necessity for the buyer to figure extras or freight costs. The base price covers delivery to all Connecticut points. A zone freight charge is quoted to more remote areas. On Dec. 15 Republic Steel Corp. started a simplified procedure for quoting delivered prices on a county basis.

Mr. Williams Suggests

Under Secretary of Commerce Walter Williams says we can market the output of our growing productive capacity by: Developing new and better products; using more and better salesmen and increased advertising; reducing distribution costs; and using more market research.

New Deal from FTC

Decisions by the Federal Trade Commission and statements by Chairman Edward F. Howrey indicate FTC has no fault to find with individual use of delivered pricing methods practiced in good faith, although it is still opposed to group action on pricing methods. That's one of the reasons it refused to reopen the delivery pricing case concerning Chain Institute Inc. Furthermore, FTC has a policy not to reopen adjudicated cases even though

the membership of the board has changed radically since a case, such as the Chain Institute matter, was decided. But on future problems, look for more liberal treatment by FTC, particularly in determining violations of the Clayton Act. It will use the "rule of reason;" weigh all economic factors.

Agreement on Depreciation

Treasury Secretary George Humphrey and House Ways & Means Committee Chairman Dan Reed last week were still having trouble agreeing on all parts of the new tax proposal, but they were in accord on depreciation. Recommended will be a shift to the declining balance method of writing off facilities for tax purposes. The old life-expectancy rates will continue, but the taxpayer will take his tax deduction at the rate of twice the straight-line percentage, then apply this percentage each year to the undepreciated balance. Thus the write-off would be high in early years—about two-thirds of the cost would be written off during the first half of the item's life. It's about time for a change; Machinery & Allied Products Institute estimates that American business is currently understating its consumption of capital by about $7 billion annually as the result of inadequate depreciation charges.

Industrial Plant Prices Hold

Industrial property prices will hold steady during the first half of 1954, predicts National Association of Real Estate Boards. One-story buildings will be harder to buy and easier to sell than multiple-story facilities. Expansion and the high cost of new construction continue to stimulate demand for good existent industrial space.

Straws in the Wind

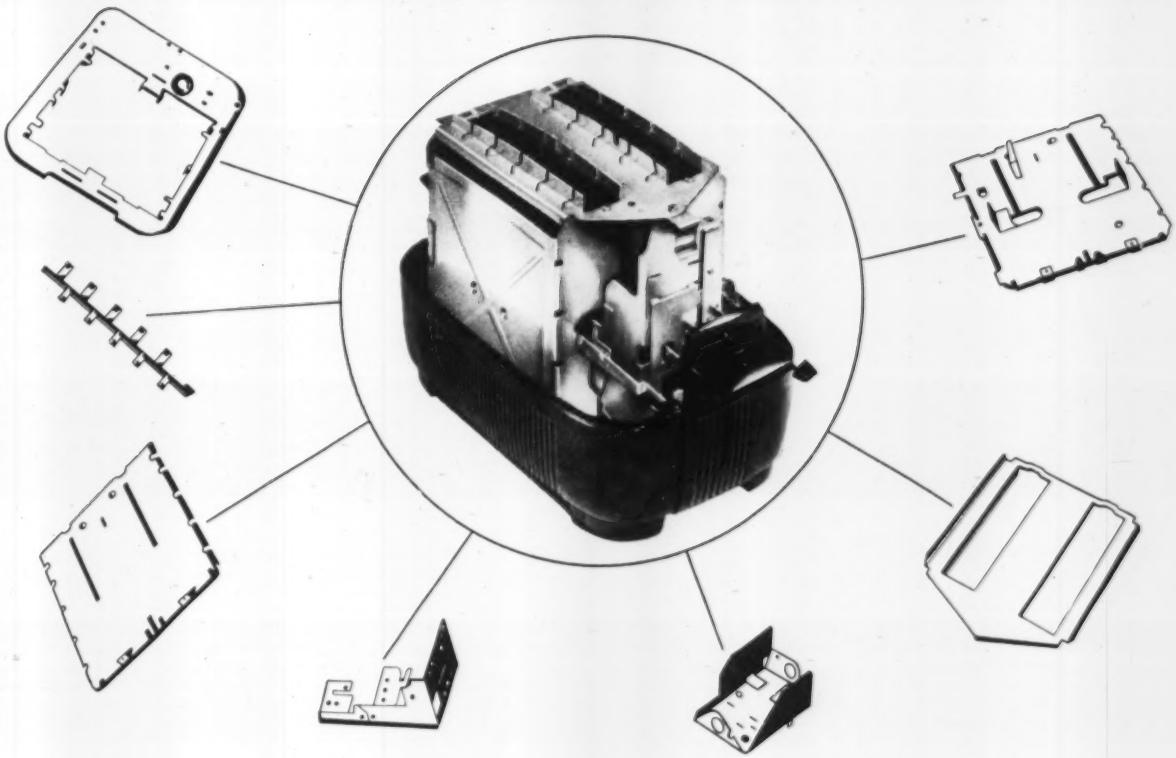
U.S. Steel Corp., after establishing an all-time production record of 35.7 million ingot tons of steel in 1953, says it will invest about $300 million during 1954 in new equipment and replacement of production facilities . . . Youngstown Sheet & Tube Co.'s $165-million expansion in the Chicago district will be completed this month . . . Census bureau estimates U.S. population was 161.2 million on Jan. 1, 1954 . . . General Electric Co. charges the U.S. will lose more than $1,159,000 in taxes and U.S. workers will lose about $2 million in wages through the award of a government contract for two huge electric power generators to the English Electric Co., England, instead of GE, low U.S. bidder for the contract . . . The Army plans to cut back some of its contracts for vehicles, weapons, communications and other equipment . . . L. S. Hamaker, Republic Steel Corp.'s general manager of sales, expects 80 per cent steel operation in 1954; sees no labor strife.

This Week in Metalworking

General business activity will decline from 5 to 7 per cent in 1954, concludes a NICB economic forum (p. 31) . . . Expiration of the excess profits tax brings no tears from industry (p. 32) . . . Loss of man-days due to strikes dropped to the second lowest point in the postwar period during 1953 (p. 33) . . . More production capacity is needed for six critical metals and minerals if present goals are to be achieved, says the General Services Administration (p. 34) . . . Unit production of military aircraft hit the since-Korea peak in 1953 (p. 40) . . . Electrical equipment makers may have their second-best dollar sales year in 1954, says NEMA (p. 41).

Saves $100,000 a Year

by specifying this Special Armco Steel



A few years ago a leading manufacturer changed from a plated metal to Armco ALUMINIZED Steel for several parts of an electric toaster.

THE CHANGE-OVER SAVES $100,000 A YEAR. This saving is in plating costs alone. Because it is a hot-dip aluminum coated steel, Armco ALUMINIZED needs no plating. Interior parts of the toaster are simply stamped out and installed without any additional operations.

HIGHLY EFFICIENT, TOO

Besides cutting costs, parts made of Armco ALUMINIZED Steel assure top efficiency. The inside stays hot, the outside cool. The reason is that Armco ALUMINIZED is an excellent *heat reflector* up to about 900 F. It reflects more than 80 per cent of the radiant heat thrown against it.

At higher temperatures, Armco ALUMINIZED is a good *emitter* of radiant heat. From 900 F to about 1250 F the aluminum coating alloys permanently with the steel base. It forms a tight gray surface layer of iron-aluminum alloy. This also gives the steel an unusually good refractory coating.

If you make products that are exposed to a combination of heat and corrosion, there's a good chance that Armco ALUMINIZED Steel can help you cut costs and turn out a *better* product.

It may pay you to look into the advantages of this Armco Special-Purpose Steel. Just fill in and mail the coupon on this page for complete information.

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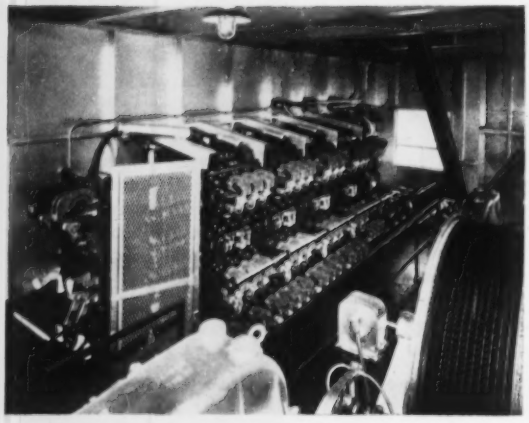
EC&M CONTROL Offers Many Advantages for DIESEL-ELECTRIC CRANES

KING SIZE Barge-Crane shown with 62½-Long Ton Test Load on 50-Long Ton Floating Crane. Built by Wiley Mfg. Co., Port Deposit, Md.



View above shows EC&M Crane Protective Panel at left, row of EC&M Magnetic Controllers with the well-known LINE-ARC Contactors and TIME-CURRENT Relays, and EC&M Cam Master Switches (arranged for remote operation) at the extreme right. Adjacent to the hoist drum in the foreground is an EC&M Rotating Cam Limit Switch and beyond this an EC&M Type WB Brake partially shows.

Wiley Manufacturing Company takes advantage of the inherent safety and quick response in operation of series-wound brakes and the simplicity and excellent characteristics of series motors for the main, auxiliary and whip-hoists and luffing motion of their barge-cranes.

The EC&M Wright Dynamic Lowering Circuit Controller used on these motions prevents heavy peak loads on the Diesel Generator, because:

(1) ALL line current passes through the brake coil on the first point lowering, giving quick brake release with minimum power.

(2) EC&M TIME CURRENT Relays retard the rate of acceleration of heavy loads in hoisting, yet allow faster operation with light loads. And for rotating the crane, TIME-CURRENT Relays govern the rate of acceleration of the swing motion with topmost smoothness.

Specify EC&M Control to get these exclusive advantages.

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Moving Cautiously

Among the millions of Americans who listened to President Eisenhower's 15-minute talk last Monday night were an untold number of industrialists, many of whom could not help but compare his philosophy of governmental responsibility with that of another Republican administration a quarter-century ago.

The spirit and substance of the Eisenhower concept of government were expressed in these words: "We believe that the slum, the outdated highway, the poor school system— deficiencies in health protection, the loss of a job, and the fear of poverty in old age—in fact, any real injustice in the business of living—penalizes us all. This administration is committed to help you prevent them. 'Help' is the key word of this administration and of the program it presents to Congress."

This strong emphasis upon "help" comes at a time when the nation's economy is undergoing an adjustment from a state of inflated and feverish activity to something that is more normal. Naturally many persons will say that this alacrity on the part of the administration to proffer assistance stands in sharp contrast to the reluctance on the part of the Republican administration to do likewise in 1930 and 1931. Doubtless some of today's more conservative Republicans inwardly are not too happy about President Eisenhower's emphasis on "help." Also, there is no question but that some Democratic politicians will claim that the President is stealing New Deal thunder.

The real truth probably is that the President's idea of what kind of help should be extended by the federal government is far different from that held by his predecessors, Roosevelt and Truman. He stated specifically that his concept of help does not mean "monuments to costly and intolerant bureaucracy."

Perhaps the President reasons—as many astute politicians do—that the idea of government paternalism has become too thoroughly ingrained during the last 20 years to be abandoned abruptly without violent reaction on the part of the voters. Under these circumstances, he may believe that the soundest policy is to proceed cautiously in an intelligent effort to shift public opinion away from paternalism and toward an environment of greater individual responsibility.

E. L. Shaner

EDITOR-IN-CHIEF

A SIGNIFICANT SHIFT: Inland Steel Co. produces leaded steels by shooting lead pellets into open-hearth metal as it is being poured into ingot molds. The addition of lead, ranging in content from 0.15 to 0.35 per cent, to any basic steel analysis, carbon or alloy, increases

machinability by at least 25 per cent and usually more.

Paralleling the development of leaded steels has been the decision by several major steel producers to discontinue the production of sulphurized screw stock steels in bessemer converters and to turn out resulphurized and rephosphorized steels of identical analysis and with equal or improved machinability qualities in open-hearth or electric furnaces.

The impact of these metallurgical developments (p. 70) will be reflected in a rather sharp drop in the output of bessemer steel. Whether or not this loss in bessemer production ever will be regained remains to be seen. There always is a possibility that technological progress, coupled with the ever-attractive incentive of finding an economical way to make steel on a nonintegrated basis, will some day bring about a revival in bessemer steel practice.

* * *

PROFESSIONALS SPEAK: Around the turn of the year, forecasts for business in 1954 graced the pages of almost every newspaper and business magazine in the country. All sorts of persons contributed their opinions—industrialists, bankers, economists, public officials and spokesmen for chambers of commerce. They were not too far apart in predicting a slowdown in 1954, but only to a pace that would make the new year the second or possibly the third best year in history.

With this picture of rather indiscriminate prognostication in mind, it is interesting to note what 14 dyed-in-the-wool economists on a National Industrial Conference Board panel (p. 31) have to say about the business outlook for 1954. These experts are objective to the "nth" degree. They believe business activity in the new year will be from 5 to 7 per cent below that of 1953. Metalworking executives polled by our editors in December thought the decline would not exceed 2 per cent. It will be interesting to see which group is right—the professional economists or the industrialists posing as amateur economists.

* * *

HAIL DEMISE OF EPT: Now that the excess profits tax again has been removed from the shoulders of corporate business, one finds industrialists elated but not entirely in agreement as to how its demise will affect the metalworking industries. The obvious reason for this diversity in opinion is that the impact of EPT never has hit all corporations uniformly. It has been a scourge to some companies (p. 32) at the same time that its devastating effects have not been visited upon other companies in almost similar circumstances.

Without question EPT has been an important factor in the wanton waste of billions of dollars. It has been a silent promoter of graft, inefficiency and sloppy administration. We have a strong hunch that when all the returns are in, the elimination of EPT in 1954 will confirm what Andrew Mellon learned back in the twenties—that a sensible tax increases rather than diminishes the revenue received by the federal government.

* * *

HANDWRITING ON WALL: According to the Bureau of Labor Statistics, the time lost because of disputes between labor and management in 1953 was second lowest in the postwar period. Total idle man-days last year were 27 million, less than half the 59 million man-days lost in 1952 (p. 33).

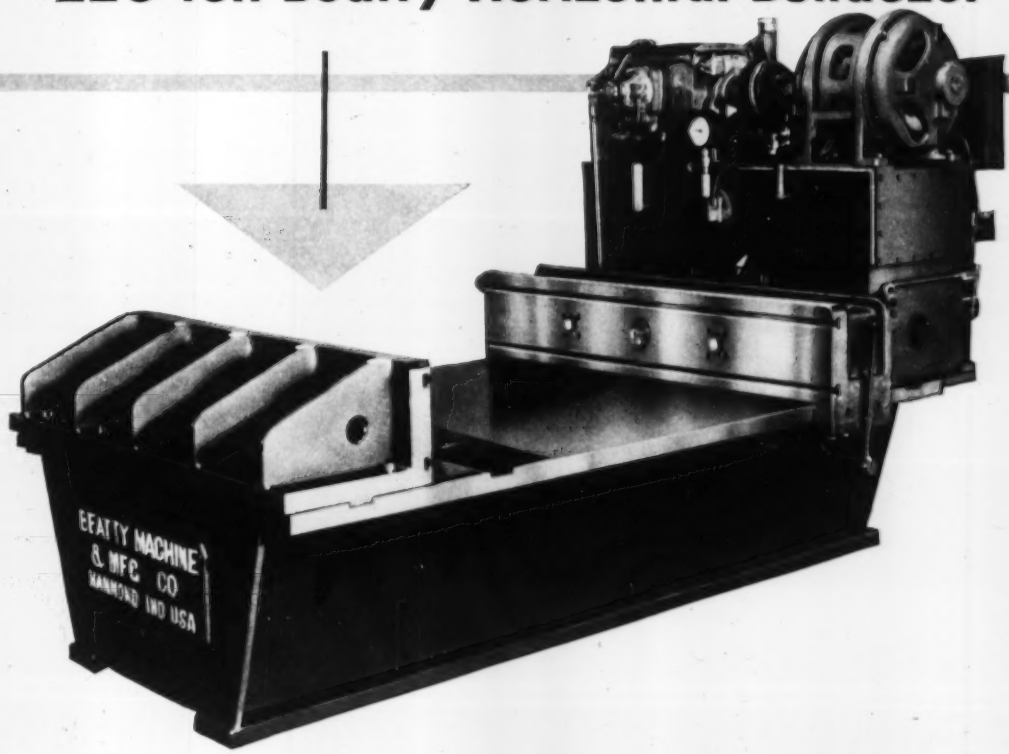
These "lost days" are important. The individual steelworker who lost time in 1952 because of the big strike had to work a long time to recoup his losses. In 1953, employees of North American Aviation Inc.—involved in one of the longest strikes of the year—finally settled on the terms originally offered by the employer—and at a great loss in take-home pay.

* * *

WHAT ABOUT GERMANY? Much has been said about the remarkable recovery of Western Germany. That recovery has been stimulated by the promotion of certain United Nations objectives in which the United States was a prime instigator, and it also has been fostered by the traditional initiative (p. 39) of the German people.

No American can spend much time in Europe without being impressed by the superiority of some German manufacturers over some of their French, Belgian, Italian or other European competitors. The Germans have a feeling of superiority which will be difficult for their rivals to combat. Nevertheless, there is a great opportunity in Europe, as throughout the world, to integrate Germany's aspirations into a sensible pattern of foreign trade.

cooling oil to insure peak capacity of this 220-ton Beatty Horizontal Bulldozer



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To insure peak capacity of its radial piston type, variable delivery pump, *by keeping hydraulic oil properly cooled,* Beatty Machine & Manufacturing Co. equipped this press with a Ross Type BCF Exchanger. *There will be no overheating to cause oil thinning here!*

Because of their extremely high thermal efficiency and unmatched ruggedness, Ross Exchangers are preferred for numerous types and makes of hydraulic machinery: extrusion and metal drawing presses, die casting machines, powdered metal presses, injection and compression molding machines. Pre-engineered and fully standardized, all-copper and copper alloy Ross Type BCF Exchangers are available to fulfill most needs with "off-the-shelf" promptness.

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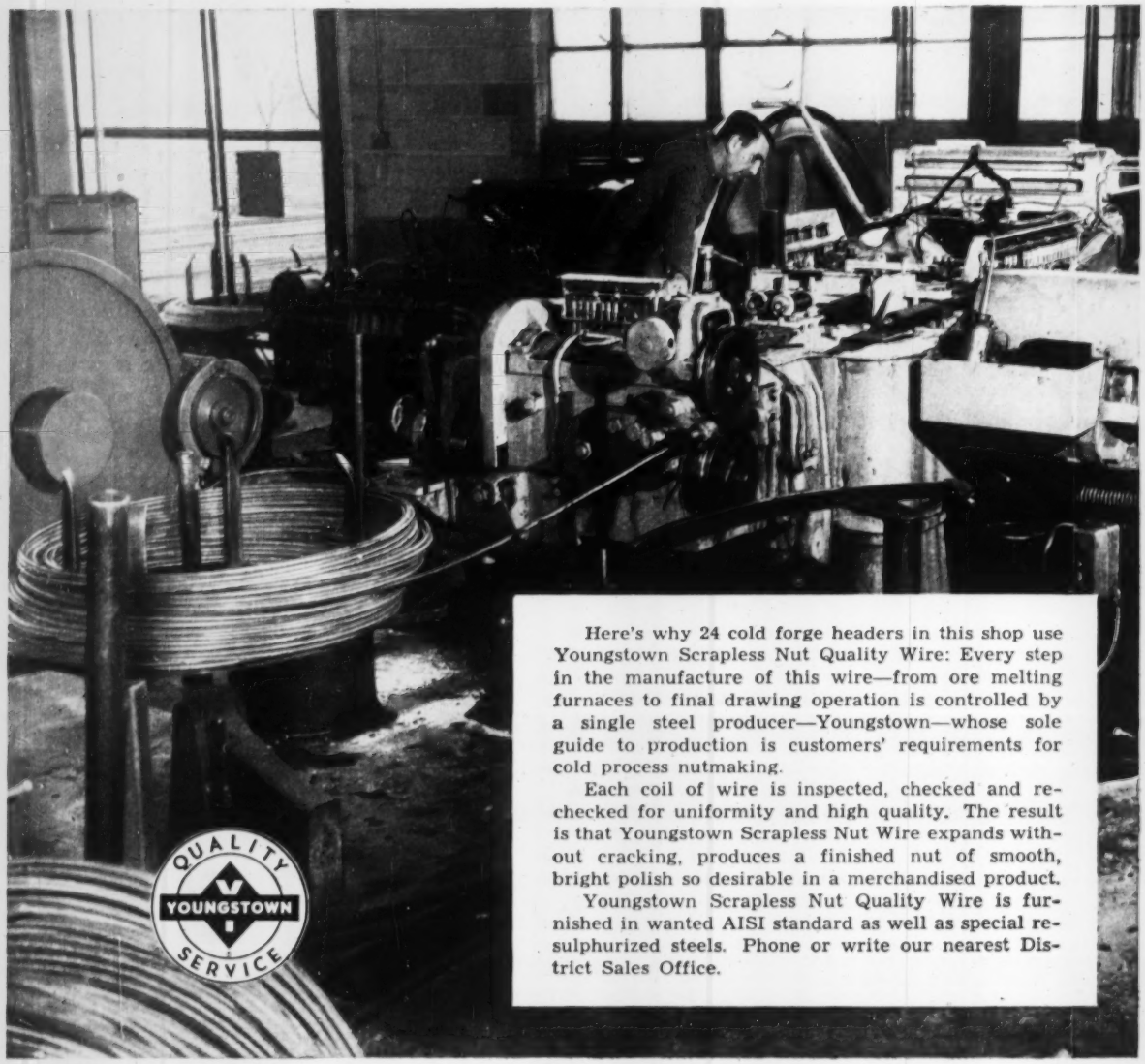
NUTS DON'T CRACK WHEN FORGED FROM YOUNGSTOWN SCRAPLESS NUT WIRE



Here's why 24 cold forge headers in this shop use Youngstown Scrapless Nut Quality Wire: Every step in the manufacture of this wire—from ore melting furnaces to final drawing operation is controlled by a single steel producer—Youngstown—whose sole guide to production is customers' requirements for cold process nutmaking.

Each coil of wire is inspected, checked and rechecked for uniformity and high quality. The result is that Youngstown Scrapless Nut Wire expands without cracking, produces a finished nut of smooth, bright polish so desirable in a merchandised product.

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Component Stocks: Best Since '50

Buyers are in nearly complete command of the situation. Good deliveries permit them to cut inventories slightly, a trend that will probably continue another three months

COMPONENT BUYERS are exercising greater control over their inventories now than at any time since the start of the Korean war (see the table on p. 30).

Trend toward smaller inventories, begun last summer, continues after a seasonal rise. Raw material purchases are down due to a slowing-up of the business pace and faster deliveries—little need to carry high stocks when orders receive quick attention.

Although the greater part of the 1953 inventory accumulation occurred among durable goods producers, most of this increase was in the form of goods in process and finished goods rather than raw materials.

A Look Ahead — Decisions of some purchasing agents are still influenced by promises of fast delivery, but their numbers are rapidly dwindling. In October, 52 per cent of the participants in STEEL's quarterly survey said they were swayed as much as a year ago by such promises—now, only 23 per cent are so influenced.

Inventory-delivery situation is regarded as adequate by 97 per cent of the respondents. And, like three months ago, antifriction bearings, gears and steel castings lead in causing the most trouble. Any component requiring a high nickel content is also harder to get.

Situation Today — An overwhelming 99 per cent of the participants believe that their inventory position is better now than it was a year earlier. While stocks of components hard to get three months ago have been increased, inventories of most other products have been reduced.

The ideal inventory for most components remains within the 30-to-60-day bracket. For electrical equipment, electric motors and belting and belt drives a 10-to-30-day supply is considered best.

Inventory Changes—Stocks of electrical equipment, fasteners, forgings, gears, screw machine products and all castings except nonferrous are smaller. Three months previously inventories of these products had been increased seasonally. Stores of air and hydraulic cylinders, spring and wire shapes and weldments are also smaller.

Besides nonferrous castings, those components with larger stocks now than in October are electric motors, antifriction bearings, belting and belt drives and stampings. The trend in hose couplings and mechanical rubber goods is mixed.

Exception to the Rule—Deliveries are faster for all items except gray iron castings. Three months ago seasonal demands caused slower shipment of air and hydraulic cylinders, electrical equipment, forgings, gears, mechanical rubber goods and weldments.

Comments from the respondents and a study of the figures on p. 30 indicate that further slight inventory reductions are likely over the next three months. That's significant because the big inventory build-up of 1953 had been particularly pronounced in the compoents field.

Rubber Sales To Contract

A record-breaking 1,341,000 long tons of rubber were consumed in 1953, and rubber industry statisticians estimate that 1954 consumption of its products will be only slightly less.

In 1953, tire and tube manufacturers, the largest single rubber consuming segment of the industry, produced 100.5 million units. During 1954, reduced production of new cars, trucks and farm tractors will result in a commensurate reduction in the original equipment tire business. At the same time, replacement tire sales are expected to exceed the 47.5 million units sold in 1953—due to the bumper crop of automobiles turned out in 1950, 1951 and 1952.

Fabricators of light mechanical rubbers goods, molded and extruded parts, expect that demand may

Latest Components Picture as Seen by STEEL's Quarterly Survey

(Figures are percentages of those replying to the questionnaire)

COMPONENTS	INVENTORY POSITION					BEST DELIVERY				
	Under 10 days	10-30 days	30-60 days	60-90 days	3-6 mos.	Under 10 days	10-30 days	30-60 days	60-90 days	3-6 mos.
Antifriction bearings (This quarter)	8	26	32	24	10	22	39	19	11	9
(Last quarter)	11	20	49	4	16	21	29	33	10	7
Belting, belt drives	17	38	33	2	10	58	30	12		
	12	41	41		6	41	53	6		
Castings, die		14	57	24	5		50	45	5	
		21	37	42		4	14	59	18	5
Castings, gray iron	2	35	51	8	4	17	57	24	2	
	9	29	40	20	2	20	59	19	2	
Castings, malleable	3	16	58	20	3		32	64	4	
		15	50	35		5	25	55	15	
Castings, nonferrous	3	41	47	6	3	16	61	20	3	
	16	20	48	12	4	16	52	20	12	
Castings, steel	3	32	52	10	3	7	50	40	3	
	4	12	60	12	12	4	24	48	12	12
Couplings, hose	9	27	45	14	5	46	38	12	4	
	12	35	24	23	6	38	25	37		
Cylinders, air, hydraulic	5	35	25	30	5	13	39	35	13	
	23	16	23	23	15	15	15	39	23	8
Electrical equipment	3	32	43	14	8	17	33	28	22	
	7	29	32	16	16	13	23	47	17	
Electric motors (fractional)	4	41	24	17	14	23	48	16	13	
	24	12	52	8	4	22	39	30	9	
Electric motors (1-5 hp)	15	30	33	11	11	37	44	15	4	
	30	30	25	10	5	28	50	17	5	
Electric motors (over 5 hp)	21	37	16	10	16	26	58	5	11	
	22	44	28	6		29	35	24	12	
Fasteners	2	28	48	15	7	20	56	22	2	
	2	22	45	24	7	14	41	40	5	
Forgings		27	43	20	10		46	38	8	8
	4	16	48	20	12		22	37	19	22
Gears		27	29	32	12	3	26	35	23	13
	7	17	28	27	21	8	7	41	22	22
Rubber goods, mechanical	8	35	38	14	5	19	42	36	3	
	8	31	46	11	4	21	21	42	16	
Screw machine products	2	25	51	14	8	9	52	31	8	
	2	23	34	34	7	7	34	36	23	
Springs, wire shapes	4	19	50	21	6	7	47	33	11	2
	4	17	34	38	7	2	49	31	16	2
Stampings	3	19	45	23	10	7	48	39	6	
	7	22	50	21		13	21	50	4	12
Weldments	27	20	47		6	15	39	38	8	
	18	18	55	9		10	30	50	10	

taper-off 5 per cent from the record levels of 1953, says the Rubber Manufacturers Association. Production of heavy industrial rubber goods will probably remain near the 1953 level.

Labs To Get Fast Write-Offs

Fast amortization will be allowed on research laboratories doing work on a commodity for which fast amortization has been granted or which would be eligible for fast amortization. A ruling to that effect now is being written by the Office of Defense Mobilization. It will give to laboratories of basic materials producers the same treatment as given to research laboratories of defense contractors.

'53 Research Hits All-Time High

Private and government outlays for industrial research hit the all-time high of $3 billion in 1953, Dr. Paul Schwarzkopf, president, American Electro Metal Corp., Yonkers, N. Y., says.

The 8 per cent increase of 1952 does not include the expenditures in the federal atomic energy program. Industrial research in 1952 totaled $2.9 billion.

Rapid expansion of independent research organizations has also been a highlight of the research movement which got its impetus during World War II. Today there are 3300 private organizations compared to 1600 in 1930.

1954 Decline: Steeper for Metalworking?

Economists on NICB's forum predict business activity this year will parallel 1949's recession. Auto, hard goods output may suffer more than the over-all economy

BUSINESS ACTIVITY in 1954 will decline some 5 to 7 per cent, but metalworking's downcurve could be greater than that of the over-all economy. That's the picture predicted by 14 of the nation's top economists who participated in the National Industrial Conference Board's economic forum. The tone of the economists' predictions was generally more somber than that of the 5000 metalworking executives polled by STEEL (see STEEL Yearbook, Jan. 4, p. 117-124) who foresee only a 2 per cent decline in this year's activities.

Estimates on how deep the current downtrend will cut varied among the economists according to the particular phase of the economy they represented. The consensus, however, is that the decline will parallel that of the 1949 recession.

Plus and Minus—Strong points mentioned for this year's business prospects include continued high-level construction, an increase in sales of nondurable goods and services, high consumer savings and population growth. Major weak factors forecast by the forum are a decline in automobile and other durable goods output, decreasing employment and a decline in disposable personal income.

Steel production in 1954 will average nearer 80 per cent than 100 per cent of capacity, according to the prediction of Bradford B. Smith, U. S. Steel Corp. economist. Pointing out that there has been a great inventory build-up of agricultural capacity, industrial capacity, weapons of war, houses, automobiles and home equipment, he said that this, coupled with the present tax structure, indicates a dark outlook. But he predicts a mild recession on the basis of the current easing of the tight-money policy and other offsetting factors and cushions available to bolster the economy.

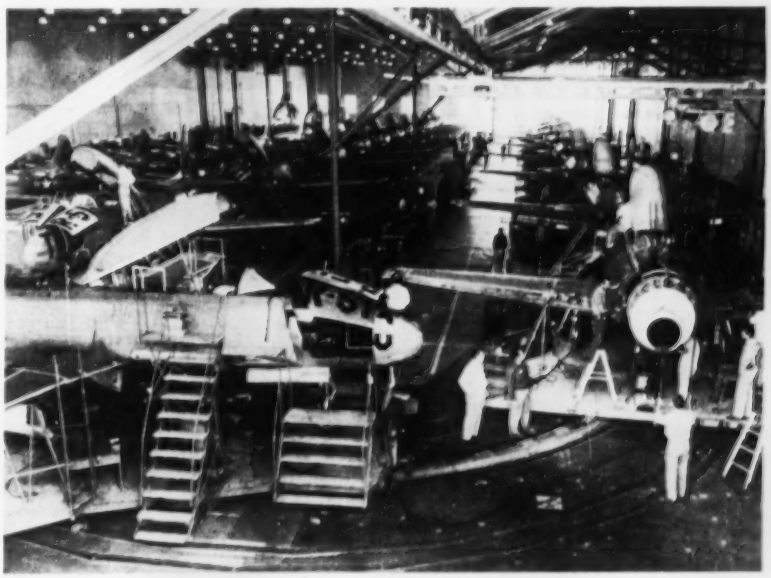
And Still Strong—One of the most optimistic outlooks presented at the forum was given by Thomas S. Holden, vice chairman, F. W. Dodge Corp., who predicts continued high-level construction activity this year. Although residential construction will probably decline to between 990,000 and 1 million starts this year, commercial, school and public utility construction should increase.

From the forum, too, came one of the lowest estimates on U. S. auto output for 1954. Rufus S. Tucker, General Motors Corp. economist, estimates that output this year will be 4.5 million cars at most. He bases his prediction on the recent high rate of old car replacements, decreasing credit, record high stocks of used cars whose prices are diving, and the fact that unfilled orders are at the lowest point today in at least the last four years. Mr. Tucker pointed out, however, that his was the lowest of 31 estimates he had compiled.

The Labor Front—Another prediction which will affect metalworking is that 1954 will see more unrest on the labor front. John T. Dunlop, Harvard University, points out that a large number of significant labor contracts will be opened because of expiration, and whole agreements will have to be negotiated rather than simply reopening clauses. Wages will go up 5 to 8 cents per hour. On the labor legislation issue, Richard P. Doherty, National Association of Radio & Television Broadcasters, predicts that no major changes in the Taft-Hartley Act will be forthcoming in 1954.

Defense spending, in which metalworking has a big stake, will decline gently in 1954, predicts Edwin B. George, Dun & Bradstreet Inc. economist.

Taxes—Up or Down?—Tax talk also bobbed up in several of the economists' predictions. Mr. George predicts that the scheduled Apr. 1 cuts in corporate and excise taxes will not be made, "except possibly for token snips." Louis J. Paradiso, Commerce department, predicts that the drop in personal income taxes will stimulate sales in soft goods and services, even to the point of offsetting a decline in durable goods sales. Pointing out that today's picture is not the same as that preceding 1949 because of the lack of postwar backlogs, U. S. Steel's Mr. Smith recom-



Mechanization Brings Plane Production Savings

Mechanized U-turn final assembly line is saving more than 3000 man-hours per month for Lockheed Aircraft Corp. in production of T-33 jet trainers for the Air Force, Navy and Marines. The line, at the Van Nuys, Calif. plant, has 22 separate assembly stations and cost approximately $60,000 to install

mends eliminating the "incentive-destroying" taxes to encourage the creation of new jobs to replace the old ones (the inventory building) which have been completed.

Included in the economists' predictions on how far the decline was headed were one or two predictions when the upturn would come. Said A. D. H. Kaplan of Brookings Institution: "I do not expect . . . a positive reversal of the downtrend before the spring of 1955." Mr. Doherty believes that "early 1955 or possibly late 1954 should witness a gradual upturn from a low point followed by some sidewise movement."

Petroleum Sets Torrid Pace

Torrid demand for petroleum products in the U. S. in 1953 burned up many previous industry records.

Frank M. Porter, president, American Petroleum Institute, says that domestic demand, estimated at 2781 million barrels, was 4.6 per cent above 1952. To handle increased requirements, refinery capacity was enlarged so that it exceeded 8 million barrels a day by Dec. 31. Refinery runs per day averaged 7 million barrels.

The 49,000 well completions of 1953 also set a record.

Motor fuel production rose to 1289 million barrels. Gas, oil and distillates amounted to 532 million barrels, an increase of 11 million barrels over 1952.

Machinery Buying Tips

To help executives develop scientific methods for determining the best timing for capital goods acquisition and replacement the Council for Technological Advancement, Chicago, and the Machinery & Allied Products Institute have undertaken a long-range program.

Education and research into this field—annually 18.5 per cent of the country's industrial output of $54 billion is directly connected with the production, transportation, distribution and servicing of capital goods—will be advanced through the new National Center of Education and Research in Dynamic Equipment Policy at the Illinois Institute of Technology, Chicago.

EPT Dies—No Tears from Industry

WE'RE GLAD excess profits tax has expired. That's about the only unanimity one can find in the answers to the question of how will the elimination of EPT affect metalworking.

Actually, the death of EPT will have different effects on different companies. To the government it means a revenue loss of nearly $2 billion from the 50,000 companies who fell into this category each year.

More Muscle—But the general consensus of the companies contacted by STEEL is that metalworking will have more financial muscle to cope with the expected business decline of this year (see page 31).

"We're hoping that without EPT we'll be able to maintain about the same profits this year that we made in 1953," one Midwest executive states. "We've tried to avoid the 'cheap dollar' consideration in our operations, and we look for no major change in our activities except as good business judgment dictates."

A Penalty—Hardest hit by EPT were the companies who moved into that bracket through expansion of facilities in the past three and a half years. "You can't really call those profits excess, but they were still taxed," commented an appliance maker. Philip M. McKenna, president, Kennametal Inc., had this to say: "Excess profits taxes penalized the company which was most successful. If our company had retained the money it paid out in EPT, we could have financed numerous important scientific research activities . . . (now) we will be able to start in on more new activities."

The little fellow may be helped, too, according to the Smaller Manufacturers Council, Pittsburgh. Arthur B. Davies, executive director, believes that the tax removal will stimulate the smaller companies to make additions and purchase new equipment which they felt they could not afford before.

No Change—Although some companies intimated that the "other fellow" may have spent cheap advertising and entertainment dollars during EPT, none said that they were in that position. Generally, most executives state that they'll appropriate "as much or more" for advertising and "necessary entertainment" because growing competitive conditions will demand it.

Then, too, any additional cash realized from not having to pay EPT can be used as buffer for price competition or other emergencies. Said one small-size manufacturer, "We may find that without EPT we may be able to meet any price cuts in our field, although we don't expect any at present. It's our feeling here that any savings resulting from not having EPT will be divided between our stockholders and increased costs. We believe labor costs are going up next year."

A Replacement? — While most executives are optimistic about what effects the elimination of EPT will bring, some are pessimistic. One executive makes this somber prediction: "We expect to be soaked with another tax to make up for the removal of this one."

Labor Disputes: Relative Calm in '53

U. S. Steel

LOST TIME due to labor-management disputes in 1953 dropped to its second lowest point in the postwar period, says the Bureau of Labor Statistics. Total idle man-days last year amounted to 27 million, less than half of the 59 million man-days lost in 1952.

The number of stoppages (see table below) numbered 5100, nearly equal to the all-time peak in 1952. The sharp drop in lost man-days, however, reflects the absence of large, prolonged work stoppages.

The Big Ones—Only 28 of the total stoppages involved 10,000 or more workers. Ten were in the construction industry, four in auto manufacturing, three in steel and two each in rubber and telephone industries. Of these 28, 12 were terminated in less than a week, and only seven continued for more than a month.

Only one stoppage in 1953 resulted in the loss of as much as a million man-days—the 41-day tie-up in the northern and central California construction industry. By contrast, six disputes in 1952 were in this category.

Airplanes and Cans—Major metalworking stoppages were in the operations of North American Aviation Inc. in Los Angeles and Columbus, O., and at the American Can Co. and Continental Can Co. plants. North American's tie-up lasted 54 days and involved 32,000 United Automobile Workers-CIO members.

Proper Pollution Treatment

The 155 construction contracts to cost $38 million awarded for abatement of stream pollution during the third quarter of 1953 were substantially below the number and dollar value of awards made in the previous quarter, although totals for the first nine months of 1953 were still about 20 per cent above the comparable period in 1952.

Of the 87 new plants and 68 additions, only seven to cost $24.6-million were for places of more than 20,000 population.

Lots of Work Stoppages in '53, but Man-Hour Loss Dropped Sharply

Year	Stoppages	Workers involved	Man-days idle	Per cent of work time
1953*	5100	2,300,000	27,000,000	0.2
1952	5117	3,540,000	59,100,000	0.6
1951	4737	2,220,000	22,900,000	0.2
1950	4843	2,410,000	38,800,000	0.4
1949	3606	3,030,000	50,500,000	0.6
1948	3419	1,960,000	34,100,000	0.4
1947	3693	2,170,000	34,600,000	0.4
1946	4985	4,600,000	116,000,000	1.4

Source: Bureau of Labor Statistics. *Preliminary estimates.

All known work stoppages arising out of labor-management disputes involving six or more workers and continuing a full day or shift or longer are included in Bureau of Labor Statistics figures.

More Capacity Needed for Six Metals, Minerals, GSA Says

SUBSTANTIAL additional production capacity is needed in the six most critical metals and minerals if the expansion goals already set are to be achieved. That's the conclusion from a survey just completed by General Services Administration.

Despite big expansions completed or in process, the goal years will continue to reflect substantial deficits in availability (including domestic production and imports) of cobalt, copper, molybdenum, nickel, titanium and tungsten.

In the Works—GSA is conducting negotiations for additional expansion in nickel and titanium. Three nickel propositions are under discussion: Expansion of the government-owned operation at Nicaro, Cuba; erection of a nickel smelter at Moa Bay, Cuba, by Freeport Sulphur; and erection of a pilot nickel smelter in the same area by Bethlehem Steel. GSA is talking with some potential titanium producers, principally Monsanto Chemical Co.

Whether additional expansion in aluminum, cobalt, copper, molybdenum and tungsten will be encouraged with government support depends on findings from current studies of Defense department mobilization plans by the Office of Defense Mobilization and on the action by Congress on ODM recommendations.

Availability of Six Critical and Strategic Metals*

Metal	Units	Base Year		1953	Goal Year			
		Base year	Availability in base year	Availability in 1953	Goal year	Goal	Availability in goal year	Deficit in goal year
Cobalt	pounds	1950	10,000,000	18,300,000	1955	27,000,000	21,000,000	6,000,000
Copper	short tons	1950	2,031,000	2,084,000	1955	2,270,000	2,125,000	145,000
Molybdenum	pounds	1950	28,500,000	56,300,000	1954	70,000,000	58,500,000	11,500,000
Nickel	short tons	1950	101,000	129,500	1955	190,000	154,000	36,000
Titanium	short tons	1951	500	2,300	1955	22,000	7,200	14,800
Tungsten	pounds of contained metal	1950	9,000,000	37,900,000	1954	40,000,000	36,000,000	4,000,000

*Computed by General Services Administration in December, 1953.

Steel Capacity Soars

U. S. can now turn out 124.3 million tons of ingots and steel for castings annually

STEEL CAPACITY in the United States at the start of 1954 stood at a record 124.3 million net tons of ingots and steel for castings annually, American Iron & Steel Institute reports.

Last year's capacity increase of 6,782,940 tons set the postwar expansion figure at 32 million tons, representing a 35-per-cent increase in the eight-year period. Since 1940 the capacity has been boosted 52 per cent.

Other Expansion—The iron and steel industry has kept pace with expansion of its other facilities too. Blast furnace capacity went up 2.6 million tons in 1953 and is now rated at 82 million tons annually. Coke oven capacity increased over 2 million tons last year and is rated at more than 73 million net tons per year.

The new weekly steel capacity figure on which STEEL will base its operating rate (see Market Outlook, p. 102) is 2,384,549 net tons of ingots and steel for castings. Last year's figure was 2,254,459 tons per week.

Pittsburgh Readies New Mill

First production from Pittsburgh Steel Co.'s new $15-million cold-rolled sheet mill at Allenport, Pa., is scheduled for March. That will mark the completion of the company's four-year $64-million expansion program.

Largest share of the increase in finished product shipments is scheduled for hot and cold-rolled sheet and strip, says Avery C. Adams, Pittsburgh president. Once the new cold-rolling mill is in operation, production of hot and cold-rolled sheet is expected to rise to about 50,000 tons a month. Pittsburgh Steel's production of seamless tubular products is scheduled to continue at present high levels, and a slight increase is forecast for output of wire and wire products.

Traditionally the company has shipped about one-third of its output as seamless steel tubes; one-third as wire and wire products; and one-third in semifinished steel. With completion of the present expansion, Pittsburgh Steel will have capacity to ship over 1,192,000 net tons of finished steel products annually—about 52 per cent from hot and cold-rolled sheet mills, about 27 per cent from tube mills and about 21 per cent from wire mills.

Merritt-Chapman Diversifies

Acquisition of Newport Steel Corp., Newport, Ky., by Merritt-Chapman & Scott Corp. is con-

ditionally approved pending acceptance of a stock exchange by at least two-thirds of the stockholders of Newport Steel.

Louis E. Wolfson, Merritt-Chapman president and chairman, said the proposed acquisition is designed to give his company further product diversification. Merritt-Chapman recently expanded into the steel production field through the purchase of Milton Electric Steel Corp., Milton, Pa.

Newport Steel has an annual rated ingot capacity of about 709,000 net tons and produces hot-rolled steel sheets and coils; electric weld line pipe; semifinished billets, bars and plates; galvanized and galvannealed sheets; and certain fabricated products such as garage doors, roofing and siding.

Congress Braces for Red-Hot Session

Elections will kindle the blaze that key national issues already promise. Taxes, budget balancing and labor will test administration's strength

WITH ELECTIONS only ten months off, key national issues will generate considerable heat in this session of the 83rd Congress.

Even before Congress reconvened, Republican leaders predicted that despite any recommendations by President Eisenhower, personal income taxes would be reduced 4 or 5 per cent in addition to the 10 per cent cut of Jan. 1 and that pre-Korean excise tax rates would be restored on Apr. 1. With the deficit of $3.8 billion now indicated for fiscal 1954, and assuming that the 1955 budget can be held to $66 billion, they are claiming that the budget can be balanced in that year—provided the corporation income tax rate be held at 52 per cent. On the other hand, leading Democrats promise a fight against Eisenhower-proposed military cuts.

T-H Fuel — Despite administration and congressional leader efforts to soft pedal the Taft-Hartley amendments issue, considerable debate can be expected because of the labor leaders' campaign to get more power. Latest turn is the union accusation that the administration is "two-faced," talking about softening T-H while at the same time tightening controls over labor through National Labor Relations Board interpretations. Adding fuel to the fire is the National Association of Manufacturers' demand for eight amendments aimed at giving the employer a break.

Much congressional activity will stem from the scheduled expiration dates of many laws. Expiration dates of particular interest to business are:

Dec. 31, 1953: Increased personal income tax; excess profits tax; Renegotiation Act.

Mar. 1, 1954: Veterans' preference for public housing.

Apr. 1: Increased corporation capital gains tax; increased corporation income tax; increased excise tax rates.

Apr. 30: Veterans' preference for rental or purchase of new housing; rent controls in critical defense housing areas.

June 12: Reciprocal Trade Agreements Extension Act.

June 30: General Services Administration authority to negotiate sales of surplus property; direct home loans for veterans; federal authority to build temporary defense housing and to help critical defense housing areas to provide community services and facilities; suspension of designated import taxes on copper and of duties and import taxes on metal scrap; Presidential authority to expedite contracts; Mutual Security Program; federal aid for school construction.

Renegotiation Board Head

George C. McConnaughey, prominent Columbus, O., attorney, has been named Renegotiation Board chairman

July 1: Military authority to acquire, expand and construct industrial-type plants and to stockpile critical machine tools; authority to establish rail transportation priorities; authority to inspect plants and books of defense contractors; authority of Federal National Mortgage Association to issue purchase contracts and to make advance commitments for disaster, military and defense housing.

July 3: United States-Philippines free trade agreement.

July 31: Suspension of ceilings on armed forces manpower.

Sept. 30: Increased federal share in public-assistance payments.

Dec. 31: Direct soil-conservation payments to farmers; mandatory fixed-price supports for six commodities at 90 per cent of parity.

Reports of study groups and commissions also will determine much activity in the second session. Never before has such extensive use been made of such groups; there are 32 of them—14 appointed by the President, 12 by Congress and 6 by or responsible to cabinet officials.

Watch These—Most important of these groups from the standpoint of business is the Randall Commission on Foreign Economic Policy. Others are the Commission of Intergovernmental Relations, the Commission on Organization of the Executive Branch of the Government, the Rubber Producing Facilities Disposal Commission, the Citizens Advisory Council on Postal Studies, Advisory Committee on Government Housing Policies and Programs, the reconstituted Air Co-ordinating Committee, Government Contract Committee and Advisory Board on Economic Growth and Stability.

By E. C. KREUTZBERG *Washington Editor*

BDSA Sprouts New Ears To Hear Suggestions from Industry

EVOLUTION to date of the Business & Defense Services Administration shows that, while BDSA will be similar in many ways to the old National Production Authority, the younger organization is sprouting new ears to listen to industry's questions and suggestions.

In line with the Commerce department's aim, as stated by Lothair Teetor, assistant secretary of commerce for domestic affairs, of "helping businessmen do the things they cannot do for themselves," BDSA will open additional avenues of approach for industry spokesmen and widen the range of subjects which can be discussed. "We intend to take an active interest in things in which the Commerce department has not interested itself too much before," says Mr. Teetor. "By that I mean the fields of taxation, labor relations, legislation affecting distribution — any of the broader fields in which business has a very direct interest."

Only subjects which trespass on legal ground, such as antitrust matters, will be definitely avoided.

WOCs Carried Over . . .

One carryover from NPA to BDSA is the protection from so-called "conflict of interest" statutes for industry men serving BDSA without compensation. Commerce department's general counsel assures such WOCs that "a WOC employed today by BDSA under the Defense Production Act possesses the same privileges that existed during the Korean emergency."

In particular, a WOC may receive compensation from his private employer while in government service. Further, WOCs employed to assist in carrying out the provisions of the Defense Production Act need not be limited to participation in defense matters. "It is sufficient," the general counsel says, "if a substantial part of his duties relates to defense production matters."

WOCs serving BDSA may not do the things they were not allowed to do under NPA, however. They may not negotiate contracts with their private employers. They may not pass on recommendations of their private employers.

IACs Carried Over Too . . .

The same rules that governed the NPA industry advisory committees continue effective under BDSA. These committees are concerned with specific products and furnish technical and scientific information of help in determining allocations. At present there are some 500-odd advisory committees, though a good many of these are to be disbanded during 1954 because there is no work for them.

Something New for BDSA . . .

In addition to industry advisory committees, BDSA will institute a flexible system of informal industry conferences for discussion of peacetime and defense activities.

Industry conferences are to be called for discussion of a particular agenda, but after the agenda has been disposed of the meeting will be thrown open to questions and suggestions. Whole industries won't be invited to the conferences; attendance, to be limited to 30 or 35 persons, will be selected on the basis of the subjects to be discussed. If distribution is to be the topic, sales managers will be invited; for discussion of technical subjects, engineers or operating men will be called in.

There isn't anything really new in the industry conference idea — they have been called from time to time in the past, particularly during the Hoover administration. But they're something new for the BDSA setup, and current usage may make a big difference in how well industry is heard in Washington.

Two for BDSA

Clarence R. Burrell, left, vice president-sales, Tool Steel Gear & Pinion Co., Cincinnati, has become director, General Components Division, BDSA; and James C. Kelley, right, is the newly appointed deputy director, Metalworking Equipment Division, BDSA. Mr. Kelley will be the permanent career man in the division

MORGAN builds a Mill—

for Sweden's Oldest Corporation . . .

Down through history Swedish iron masters have been known for their skill in steelmaking.

To allow them to apply present-day production methods to their art Domnarfvets Jernverk has turned to Morgan Construction Company for a modern, flexible, Merchant, Rod and Strip Mill.

Morgan's experienced engineering staff designed this mill, it was built in Worcester and erected in Domnarvet, Sweden under the direction of Morgan engineers. Its production record has been consistent with the best Swedish tradition.

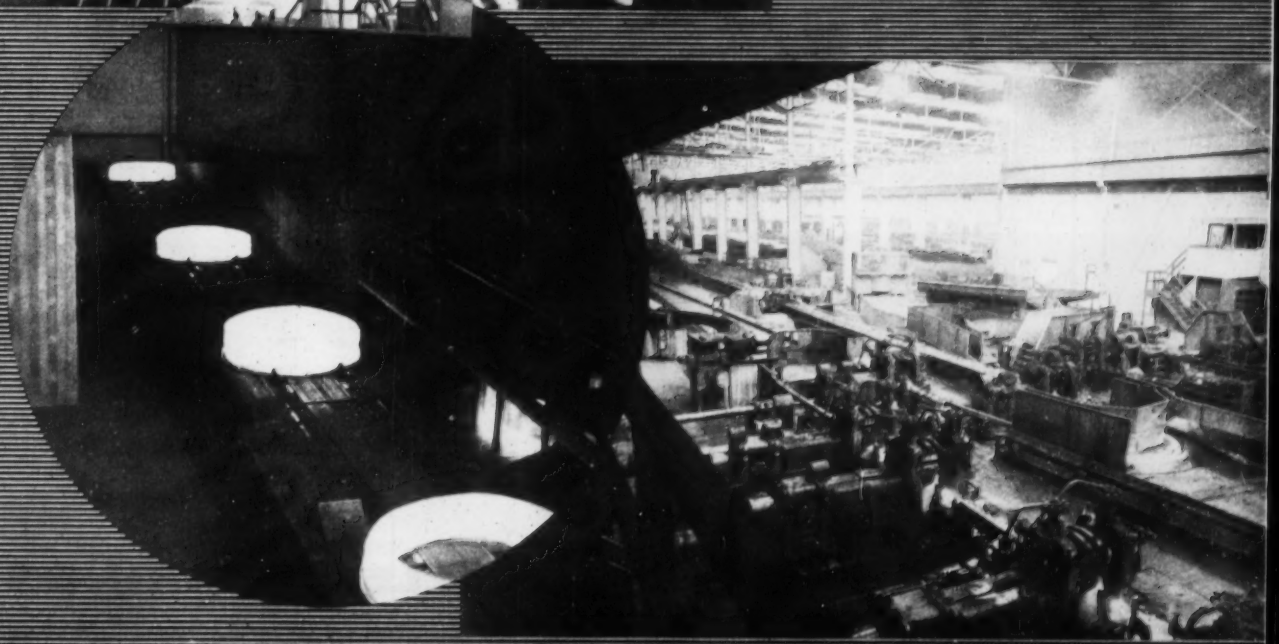
MORGAN CONSTRUCTION CO.

WORCESTER, MASSACHUSETTS

English Rep., International Construction Co., 56 Kingsway, London W. C. 2, England

ROLLING MILLS • MORGOIL BEARINGS • WIRE DRAWING MACHINES
REGENERATIVE FURNACE CONTROLS • EJECTORS • GAS PRODUCERS

RM-87

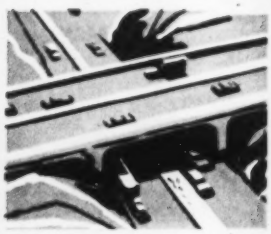


For tractors and implements . . .

for cars, trucks and busses . . .

NEW HYATT BARREL BEARING!

You're looking at a cross section of industry's newest find—*the bearing that's built with barrel-shaped rollers!* Developed by Hyatt, the Barrel Bearing is of true dual-purpose design—it takes load from any direction. But more than that, the Barrel Bearing is self-aligning—and misalignment of supporting parts cannot cause excessive wear, as it does with ordinary bearings. Now in volume production, this new bearing is in the newest trucks and busses, in farm, textile and construction equipment, and in many types of oil field machinery. In fact, if you own a new car there's a good chance that Barrel Bearings are in the wheels and differential.



for construction equipment and many types of new machinery.

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION • HARRISON, N. J.

Tariffs: Some Protection Needed

Gwilym A. Price, Westinghouse president, warns against any further general reductions in U. S. tariffs. Inroads of foreign electrical equipment producers is cited

THE YEAR-END report of Siemens, German electrical equipment manufacturers' combine, shows production increased 14 per cent in 1953 over 1952 and thirteen-fold over the production of 1945-46. Output is thus again at prewar levels.

At the same time, more than 50 per cent of the new orders booked by the Siemens combine during 1953 came from outside Germany—a sizable increase in export orders since export shipments in 1953 ran less than 25 per cent of Siemens' total shipments.

Looking Outside — German electrical equipment makers, like many other types of European metalworking manufacturers, are succeeding in selling more of their goods to world markets, often at the expense of American manufacturers. In fact, the U. S. itself is a prime target for these foreign producers.

An analysis made by O. Glenn Saxon, international economist and professor of economics at Yale University, of recent studies by the National Industrial Conference Board and other organizations on the American electrical equipment industry, says, in part: "U. S. tariff rates, sharply reduced in the years between the two wars, and even recent federal legislation designed to protect the (American electrical manufacturing) industry's domestic market are proving inadequate in view of the much stronger competitive position of foreign manufacturers since 1950."

After examining the rates of growth of electrical equipment exports and imports and ramifications of these trends, the Saxon analysis concludes: ". . . the most feasible alternative to the U. S. in its enlightened self-interest and the least damaging to foreign countries would be the elimination of imports of all strategic products of the industry, with selective adjustments upward or downward for other products of the industry."

Expanded Point — Gwilym A. Price, president of Westinghouse Electric Corp., for which the Saxon analysis was made, expands the above conclusion to: "Any further general reductions in U. S. tariffs could seriously affect many industries, large segments of labor and agriculture, and entire communities." Mr. Price says the "Trade Not Aid" slogan is being changed, in effect, to "Trade Not Aid for Foreign Manufacturers; Aid Not Trade for U. S. Manufacturers" by some American free trade advocates.

All of the facts are being funneled into the minutes of the Commission on Foreign Economic Policy (Randall commission) which will make its report within the next few weeks.

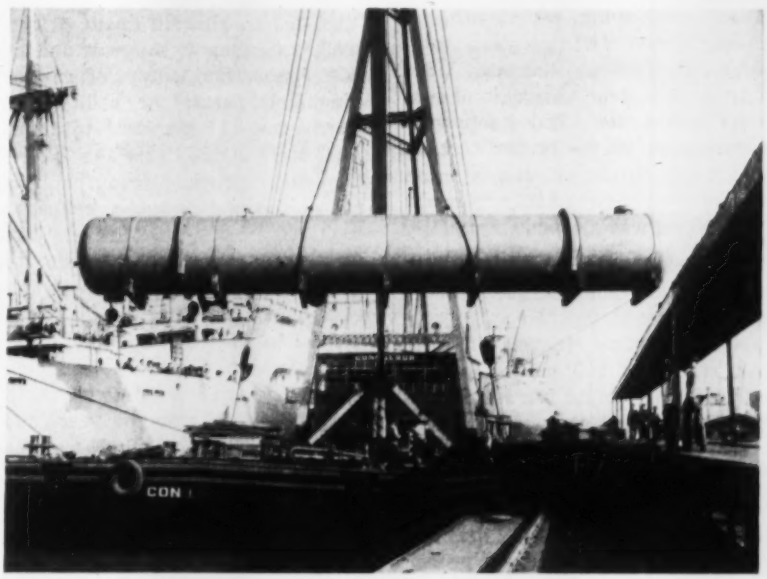
Canada Clamps Down

Canadian firms may no longer import end-of-season, end-of-line and other classes of closeout merchandise at abnormally low prices, according to an amendment to section 35 of Canada's Customs Act. The amendment gives the minister of national revenue authority to raise the valuations for customs duty purposes when the market price of any manufactured goods in the country of export has declined "to levels that do not reflect the normal price."

Although the amendment was referred to textile imports particularly, it can be applied to any commodity.

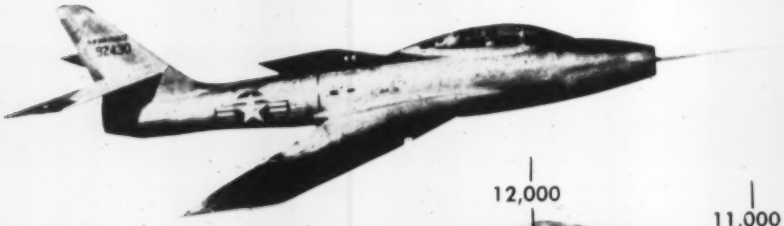
Import-Export Notes

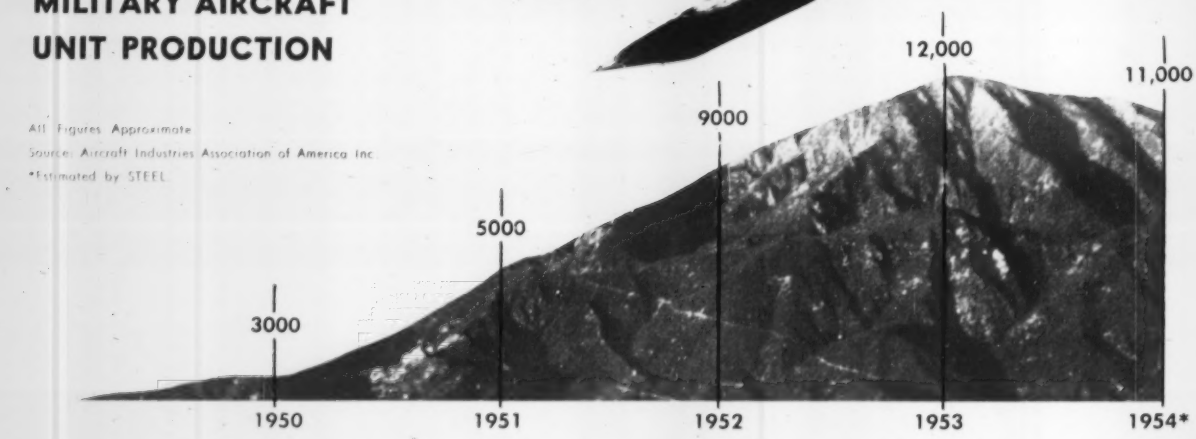
Blaw-Knox Co.'s Lewis Machinery Division has a $4.5-million order for installation of a combination rod and merchant mill for the Monterrey Steel Plant, Monterrey, Mexico. Delivery is scheduled for early fall of 1954. . . Kabel und Metallwerke, Neumeyer of Nurnberg, Germany, one of the first companies to successfully cold extrude steel, has been granted a license to use the Koldflo steel extrusion process developed by Mullins Mfg. Corp. . . . Pfaudler Co., Rochester, N. Y., will produce ten 2000-gallon glassed steel polymerizers, costing $162,000, for Pechiney Co., Paris, France, to be used in production of plastics.



More Propane Gas Storage for Venezuela

One of 17 large propane storage tanks built by American Car & Foundry Co. and destined for use in Venezuela is loaded aboard the Netherlands steamer *Norinda*. This 30,000-gallon tank has a 103-in. inside diameter and is 70 ft 9 in. in length. Nine of the storage tanks will be used in liquefied petroleum gas service at Cardon, Venezuela, while the other eight will be shipped to La Guaira, Venezuela





Over the Hump, but Still Flying High

Unit output hit its post-Korea peak in 1953; airframe weight output will strike top level in second quarter, 1954. Question is: How far will output go down from there?

THE PEAK of military aircraft unit production spurred by the Korean war was attained in 1953 with a fourfold increase over the output of 1950 as shown above.

Military plane deliveries ran about 1000 units per month, or about 12,000 for the year, says Adm. DeWitt C. Ramsey, USN (Ret.), president, Aircraft Industries Association. Those deliveries represented 90 to 95 per cent of the total output of the aircraft industry though civilian aircraft production was also substantial.

A Peak Ahead — High point in military airframe weight production will not be reached until probably the second quarter of 1954. An estimated 150 million pounds of airframe weight were delivered to military and civil customers in 1953.

This high-flying production of the aircraft industry boosted nearly all industry statistics in 1953: Sales of aircraft, engines, propellers and spares were pushed to $9-billion with monthly sales in excess of $900 million being rung up in the latter part of the year; work force was hovering around 750,000 persons in 1953 compared with 262,000 in 1950; floor space was figured at 135.8 million square feet in 1953 compared with 63.5 million square feet in 1950.

Civies—While production of commercial transport planes declined from 453 in 1952 to about 315 in 1953, according to Aircraft Industries Association, output of smaller commercial craft, or utility airplanes, rose 17 per cent to about 3800 units in 1953 (see the following story). Helicopter output was at an all-time high and increased constantly during the year. With most 'copter production going to the military, exact number of units completed could not be disclosed. Only this much could be said: Helicopter manufacturers' backlog exceeded the half-billion-dollar mark for the second straight year, and production for civil purposes was increasing.

These were all fair weather signs for the aircraft industry. However, during 1953 the industry saw the wind sock on their business shift direction, foreboding a change in the business weather for 1954 from that which had prevailed for the preceding three years.

Reduce and Stretch — Reduced and stretched-out military aircraft programs, while not affecting 1953 production, meant that unit production of airplanes would begin to gradually decline from about May or June, 1954, and into 1955. The industry's military unit output in 1954 is not expected to top the 11,000 mark. Employment will taper from August of 1953's 775,000 persons to about 725,000 by year end, 1954. Subcontracting will be curtailed.

Dollar sales will still be close to $9 billion in 1954, though, as utility aircraft and helicopter production increase and airframe weight per unit gets heavier (larger, more complicated and more expensive planes). The hooker in the aircraft industry's stratospheric gross sales is the hedge hopping net profit left from those sales. In 1952 net profit amounted to only a 2.2 per cent margin on sales; in 1953 the margin was 2.3 per cent. That contrasts with 5.4 per cent margin averaged in 1952 by 1783 manufacturing concerns surveyed by the National City Bank of New York. Aircraft manufacturers warn that these slim profit margins weaken the industry and may jeopardize this vital sector of the defense production base.

Some members of the industry are beginning to wonder how far down the cloudy weather ahead for aircraft will force the production level from the peak established in 1953.

CAA Reports on Civil Aircraft

The number of civilian aircraft manufactured in 1953 rose 22 per cent to 4290 for all types, estimates F. B. Lee, administrator of civil aeronautics, Civil Aeronautics Administration. The gain was made in output of one-to-five-place planes used for business, agricultural and industrial flying rather than in larger commercial transports, says the CAA official.

The Aircraft Industries Association estimated a similar, though somewhat smaller, increase (see the story on p. 40).

The CAA reports a survey made in 1953 shows increases in hours flown for business, agricultural and industrial purposes with a decline in hours flown for instructional and pleasure purposes. Business flying topped the list of general aviation activities in 1953 with 3,124,000 hours.

Improvement of electronic aids to navigation on the airways continued, according to the CAA, with net increases in new facilities commissioned for operation including 23 instrument landing systems, 7 airport surveillance radars, 16 distance measuring installations and 9 very high frequency omnidirectional radio ranges.

Second Best Year Coming: NEMA

National Electrical Manufacturers Association expects decline in its industry this year to be in neighborhood of only 3 to 5 per cent under last year's record

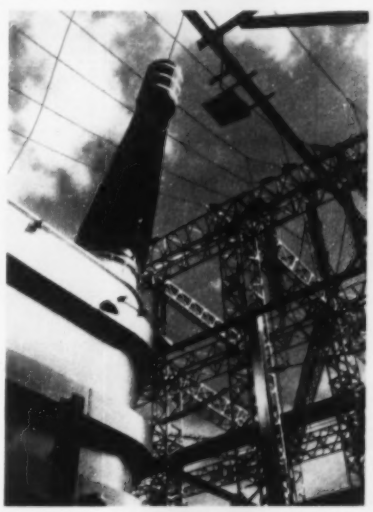
MANUFACTURERS of electrical equipment will face a decline in business of only 3 to 5 per cent this year, following a record year in which shipments reached $15.7-billion, says National Electrical Manufacturers Association. If that prediction holds true, 1954 will again top the sales of 1952, which were only 7 per cent less than in record 1953.

All branches of the industry showed gains in 1953 over 1952 except for electrical building equipment and supplies which slipped off 5 per cent. That single exception is the result of a moderate decline in new heavy construction activity, which passed its peak last year. But NEMA says, "Practically all authorities agree that . . . heavy increases in expenditures for modernization, improvements and repairs will offset decreases that are expected in new construction so that total construction next year is expected to be about the same as for 1953, or at worst suffer only a very moderate decrease." Specifically, the association pegs the drop to be within 2 per cent for electrical building supplies.

One by One—NEMA sees the new year shaping up as follows for other segments of the industry:

Insulating Materials: This segment, which showed a very heavy increase of 15 per cent in 1953, is expected to slide off about 10 per cent over the coming year.

Appliances: Electrical appliances were strong last year (STEEL, Dec. 21, p. 40), showing a rise of 10 per cent over 1952. The association predicts another good year with a drop of from 3 to 5 per cent. New appliances, such as dehumidifiers, food waste disposers, dishwashers, room coolers and TV sets will set the pace.



General Electric

ELECTRICAL EQUIPMENT IN '54
. . . sales still reaching for the sky

Industrial Apparatus: Along with illuminating equipment and wire and cable, this branch of the industry in 1953 rose above the previous year by 5 per cent. In 1954, NEMA says, illuminating equipment will hold its level; wire and cable will slide off about 6½ per cent, and industrial apparatus will drop 5 per cent below year-ago levels.

Transmission & Generation Equipment: This heavy equipment hit the peak last year, and the association predicts the level will hold in 1954. NEMA says, "There are definite plans to expand generating capacity further with an estimated addition of another 11 million kilowatts in 1954, and . . . there will also be a further increase in output of electrical energy amounting to an additional 27 billion kilowatt-hours."

Others: Automatic temperature controls, specialty transformers, x-ray equipment and the like are expected to be approximately 5 per cent under 1953 levels this year.

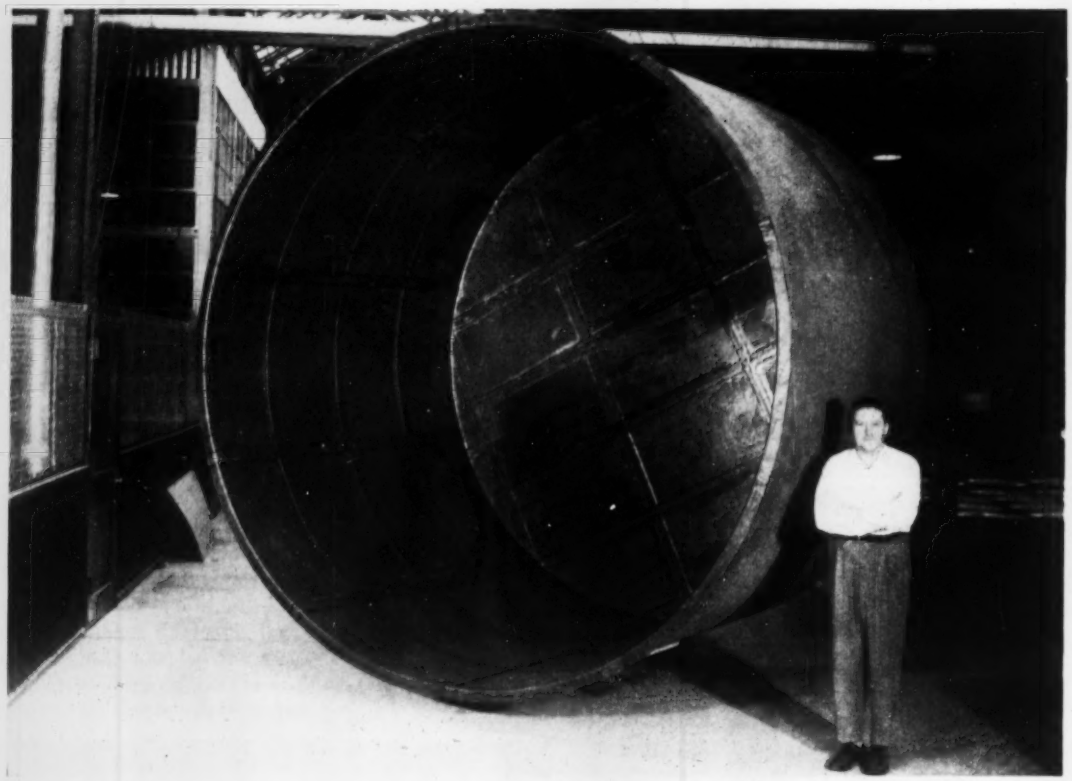
Reasons Why—The association attributes the industry's biggest year to the good health of the economy as a whole. Records were set last year for over-all industrial production, building construction, personal income, consumer expenditures and sales of electrical energy. In addition, almost 10 million kilowatts were added to the nation's generating capacity. Even though there will be moderate decreases in business this year, "the electrical manufacturing industry looks with confidence to 1954 as being one of its best years," say NEMA officials.

Also voicing a note of optimism for the new year and of praise for the past year is James H. Rand, president, Remington Rand Inc., Buffalo. He cited the exceptional development of electronic data handling devices during 1953 and the wider use through new applications of such equipment as heralding a continued increase in production. "This increase," he says, "has made feasible straight-line production of electronic data handling and computing equipment."

HERECROL

REG. U. S. PAT. OFF.

Self-curing SYNTHETIC RUBBER SHEET LINING



The CARBON STEEL TANK shown above was HERECROL lined in our shops and later installed in a Wisconsin Paper Mill for liquid alum storage. HERECROL Sheet Lining is available in ⅛" and 3/16" thickness. Application may be accomplished in the field as well as in our shop. The following is a selection of solutions which can safely be handled in HERECROL lined equipment:

ALUM SOLUTIONS • AMMONIA SOLUTIONS
COPPER SULFATE • FERRIC SULFATE
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NITRIC ACID • SODIUM HYDROXIDE
PHOSPHORIC ACID • NICHEL SULFATE
ZINC CHLORIDE • ZINC SULFATE

The HERECROL Self-Curing Synthetic Rubber Sheet Lining can be applied to steel tanks and other equipment unlimited in size. The reason for this is that no special equipment to provide heat or pressure is required. Storage tanks, processing vessels, tank cars, trailer tanks, pipes, fans, blowers, and duct systems have been successfully processed.

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Branch Office: 327 South LaSalle Street, Chicago, Illinois

FORD — 1954
. . . luxury gadgets in the lower price range

PACKARD — 1954
. . . more passing pep with conservative style

Showmanship on Auto Row: Press Previews Herald New Models

DETROIT

DEALING in a consumer product whose success is determined by public reaction, the auto companies share a superstition that news treatment of their new models is important. To insure that the press is favorably lubricated, the automakers compete in their press previews for the favor of these molders of public opinion. The 1954 Buick, Ford and Packard cars (see p. 44) were introduced to the press some weeks ago in typical fashion.

A press preview begins with a few words from an executive in the auto company noted for his friendliness. He explains that the company appreciates the newsman taking time out of his busy day to be with them but expresses the belief that what the company has to show will be worth his time and effort.

Comes the Show—Often the show has to do with the auto company rather than the new models and is a full-scale Broadway production. Name stars and vast numbers of well-endowed girls line up and sing the virtues of the particular make of car with a strong inference that they look at the make of car first and the man second. A cunningly contrived plot may be worked into the show indicating that in the near future few people will be driving anything but this make of car. After about an hour the show ends as the girls introduce their sweetheart, the sales manager.

The job of the sales manager is to express sincere sympathy for the competition when this new car is introduced and demonstrate in an obviously restrained fashion his boundless optimism for the product. He speaks of enthusiastic dealer response to the new cars. He teases the newsmen with a few general statements about increased horsepower and a longer, lower look. Then, as if the idea had suddenly occurred to him, which indeed it may have, he says, "But you came here to see the new car. I'll let it speak for itself."

Music — The orchestra plays a fanfare or the car's alma mater, and a curtain is slowly drawn. A spotlight suddenly comes on — there it is turning majestically on a pedestal . . . the new model. The chief engineer is then introduced and finally gets down to the business of explaining the new features of the car. This is the meat of the whole deal and takes about 15 minutes.

The newsmen are then led through some open doors at the rear of the auditorium to an ex-

BUICK — 1954
. . . fast getaway and a return to the Century series

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Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	757,595	226,134
August	641,152	322,755
September	605,228	595,715
October	651,153	656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
Dec. 5	123,148	129,005
Dec. 12	113,145	121,590
Dec. 19	134,156	134,933
Dec. 26	92,247	102,558
	1954	1953
Jan. 2	91,135	106,102
Jan. 9	130,000*	139,620

Source: Ward's Automotive Reports.
*Estimated by STEEL.

hibition hall where they have about 15 minutes more to rub, sit in and crawl over the new models on display. Then it's time for dinner and cocktails. As the newsmen leave late in the evening they are given a press packet which contains all the information on the new models and on the surface makes the press preview quite unnecessary.

Aftereffects—Later on when the newsman sits down to write he only remembers that something nice happened in connection with the press preview. In his confused state he forgets the girls and the cocktails and concludes it must have been the new models. Thus does the subtle indoctrination of the press preview have its effect.

Buick for 1954

All new bodies, wrap-around windshields, V-8 engines in all series, increased horsepower and a return of the Century series highlight Buick for 1954.

The V-8 in the Special series bows in at 150 hp while the Roadmaster has been upped from 188 to 200 hp and the Super from 170 to 182. Top performer in the lines, however, promises to be the Century which sports the Roadmaster 200-hp engine in the Special chassis. The 0-60 mph acceleration figure of slightly over 10 seconds is reported, and that's pushing.

Speedometers — All-steel estate wagons are available for the first time this year in the Special series as well as the new Century series, with an unusual, new speedometer featured on the Roadmaster and Super series. Speed is indicated by a solid red line that appears to move horizontally across a scale in the manner of a thermometer. Actually, the driver sees a narrow portion of a red spiral painted on a cylinder which is rotated electromagnetically as the speed increases.

New combustion chamber design to increase power and economy, new power brakes, new front end suspension to improve steering and cornering and cowl ventilation are other engineering features of the new models.

Ford for 1954

A new 130-hp O.H.V. V-8, ball joint suspension, the Skyliner model with a tinted transparent plastic roof over the driving compartment, power brakes, power steering, 4-way power seat and power-lift windows are among the features of the new Ford. In addition, the Ford six engine has been upped to 115 hp, a new Sunliner convertible with a transparent plastic panel inserted in the top over the front seat and 156 exterior color combinations enhance the new line.

Power Facts—Top news is the widely anticipated O.H.V. V-8 engine. With a short stroke and an introduced compression ratio of only 7.2 to 1, the power potential of this mill should keep Ford supplied for some time to come. The 161-hp Mercury power plant, incidentally, is the same engine with modified induction. The design is beautiful in its simplicity and ruggedness, yet well engineered for mass production at relatively low cost.

The new ball joint suspension should make the Ford one of the best handling cars on the road while the new power devices are an interesting move to luxury in the low-priced field. All in all, Ford is unlimbering some mighty big guns for its coming sales battle with Chevrolet that promise to make news in the months ahead.

Packard for 1954

A new series of cars in the Clipper line giving the firm coverage of the field from $2500 upward, an increase to 212 hp in the Packard line engine and styling changes to further separate the appearance of the Clipper from the Packard lines keynote the Packard for 1954.

Emphasis — Operating on the philosophy that in higher price cars people do not want radical changes but rather a quality product which retains its style value, Packard is concentrating on styling continuity with major changes in engine and equipment which will improve the ride. Thus the hike to 212 hp is explained as giving increased passing ability at speeds of 40 to 70 mph while top speed is not greatly increased. The engine has 359 cubic inches displacement and a compression ratio of 8.7 to 1. Four different rear axle ratios are offered permitting the buyer to choose economy or performance.

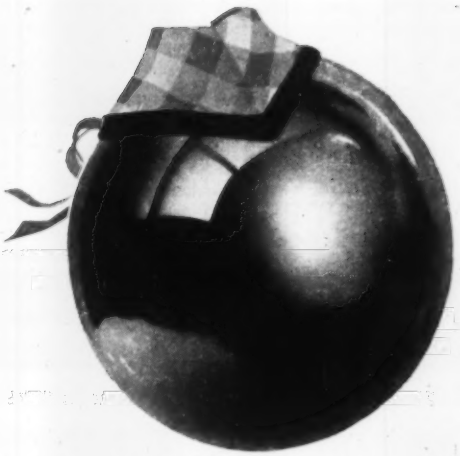
In another move toward customizing, the motorist who prefers a firmer ride may have extra seat cushion springs added to any section of the seat.

Chrysler Buys Briggs

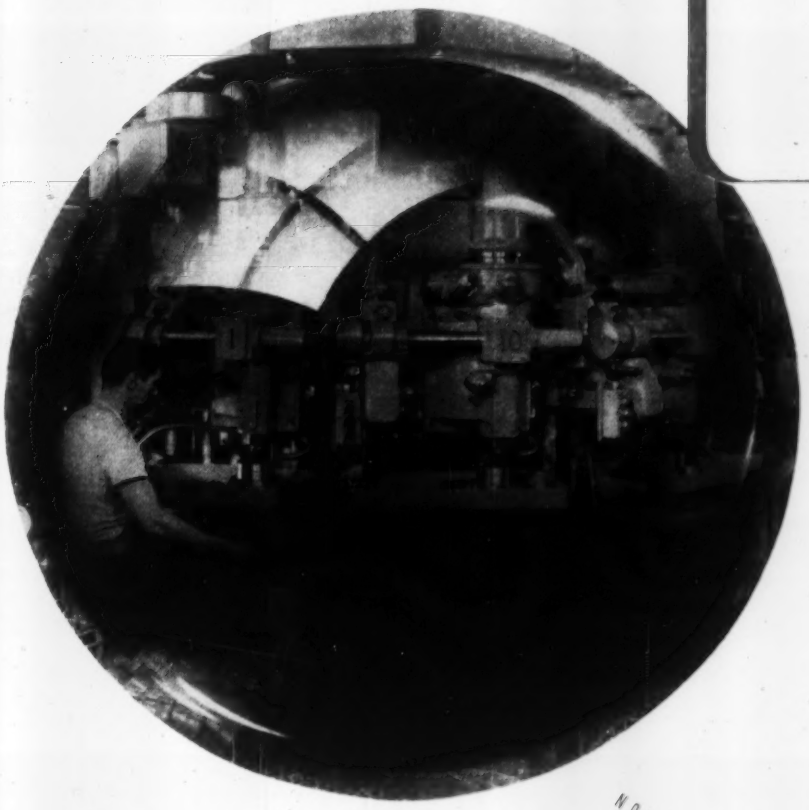
As the year ended, Chrysler Corp. completed its $35-million purchase of the principal automotive plants, machinery and equipment of Briggs Mfg. Co., to be known as the Automotive Body Div. of Chrysler Corp. The division will be headed by John E. Brennan as general manager. Over 30,000 Briggs workers transfer to the Chrysler payroll as a result of the purchase.

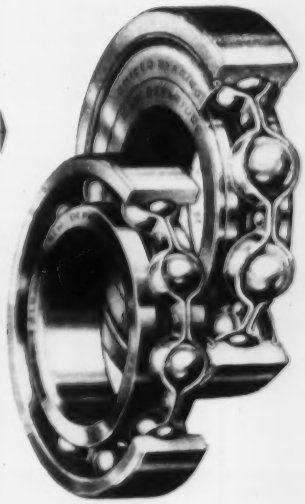
Facilities Involved — The purchase included 10 Detroit-area plants and facilities, an automotive stamping plant at Youngstown and a body assembly plant at Evansville, Ind. Not included in the transaction is the Briggs Beautyware Division.

Within 90 days additional amounts will be paid for inventories held by Briggs at the time of purchase with the division continuing to make Packard bodies as well as those of Plymouth for the time being. Chrysler Corp. already builds bodies for Dodge, DeSoto and Chrysler cars.



Money Savers in Motors and Machinery



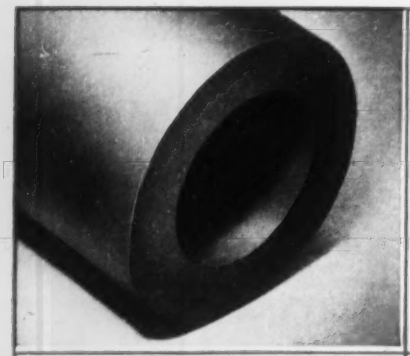


NOTHING ROLLS LIKE A BALL

Cutting down on "down-time" is just one of the many contributions New Departure **ball** bearings have made to the machine age. For New Departures have proved themselves in countless applications, from electric motors to heavy industrial machinery. They take radial and thrust loads—or *any* combination . . . preserve accurate alignment of parts . . . reduce friction . . . require no adjustment for wear—and *virtually no maintenance!* Throughout industry, designers and engineers specify New Departure **ball** bearings for top performance.

NEW DEPARTURE
BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT
Plants also in Meriden, Connecticut, and Sandusky, Ohio



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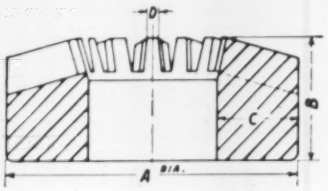

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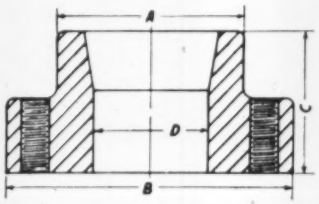
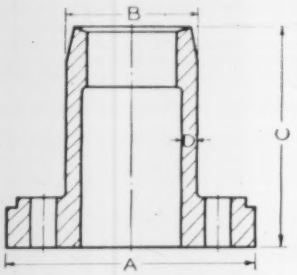


FORMING AND PIERCING DIE



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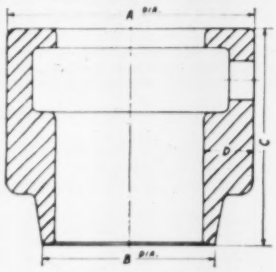
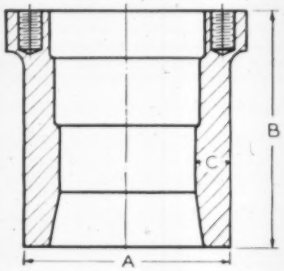


BLANKING AND FORMING DIE



How Graph-Mo® Hollow-Bar speeds production of ring-shaped tool steel parts like these

New GRAPH-MO® HOLLOW-BAR eliminates drilling—and machines 30% faster

IF you make ring-shaped tool steel parts, you can start with finish boring by using Graph-Mo® Hollow-Bar. There's no drilling—the hole's already there. You speed production, cut scrap waste and save steel.

At the same time, you get all the proved advantages of Graph-Mo. Because of the free graphite in its structure, Graph-Mo machines 30% faster than other tool steels; has a minimum tendency to pick up, scuff or gall. And the combination of free graphite and diamond-hard carbides gives Graph-Mo Hollow-Bar exceptional durability. Users report that it outwears other tool steels on an average of 3 to 1.

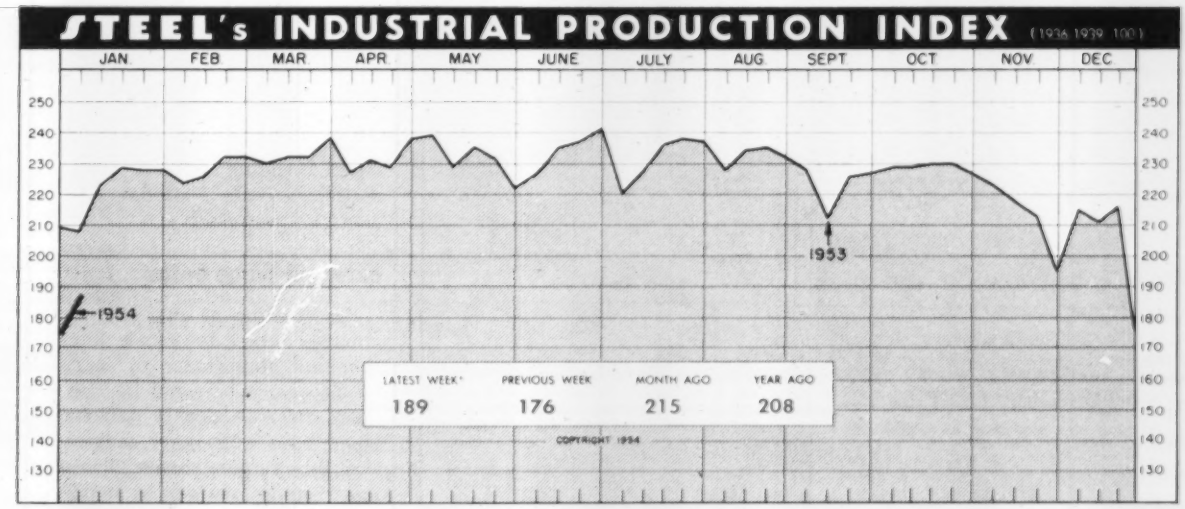
Stability tests prove Graph-Mo is the most stable tool steel ever made. For example, after 12 years a typical Graph-Mo steel master plug gage showed less than 10 millionths of an inch dimensional change. It responds uniformly to heat treatment, too.

Make sure you're getting all the advantages of Graph-Mo Hollow-Bar if you make ring-shaped tool steel parts. Sizes range up to 16" O.D. with a variety of wall thicknesses. Graph-Mo Hollow-Bar is distributed through A. Milne and Co. and Peninsular Steel Co. warehouses.

For more information about Graph-Mo Hollow-Bar, write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Jan. 2

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Autos To Set Industrial Production Pace

A PRODUCTION - SALES RACE between Ford and Chevrolet should lead the way to a seasonal rise in total industrial production in January.

Autos Ride High . . .

Automotive schedules during the month call for the outturn of 527,800 passenger automobiles, a new record, and 107,000 trucks, second only to 1951, says *Ward's Automotive Reports*. The "Big Three" expect to drive away with 92.4 per cent of industry output—487,000 cars — as the "Independents" are relegated ever-closer to the curb.

Output of appliances and TV sets will increase also—but nothing like the outpouring during the first quarter last year. Manufacturers will carefully approach a production build-up. The specter of recent sales—considerably below expectations—and rising inventories along distribution channels will restrain their enthusiasm.

Downward Adjustment . . .

Anticipated rise in industrial outturn during January follows two months in which production dropped below year-ago levels. In November, the Federal Reserve Board's industrial production index, at 130 per cent of the 1947-1949 average, was under year-ago levels for the first time in 1953. Slide in output evidently continued through December.

Personal Spending in '54 . . .

One of most important economic questions—what changes will consumers make in their buying pace and when?—will provide an answer for part of the production problem. Since consumers generally act less pessimistically than most businesses, it is highly possible that personal consumption expenditures will decline as little as 2 per cent —the lower level set by A. D. H. Kaplan of the Brookings Institution in a speech before the National Industrial Conference Board's Economic Forum.

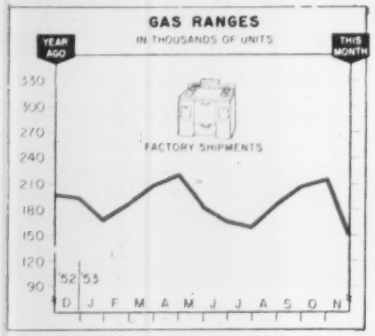
Helping to restrain the decline during the first half of the year will be the increased sales effort of many concerns. The now effective 10 per cent reduction in personal income taxes, though partially canceled by the higher social security rates, will also rouse consumer interest. An so could price reductions made possible by a decrease in net profit per item and offset by an increase in net profit after taxes—due to expiration of the excess profits tax.

Higher Wages To Come? . . .

However, it is more probable that sales prospects will be better following the summer wage negotiations and resultant wage increases. Part of the sum represented by the expired excess profits tax is being looked at longingly by union leaders.

Price Movements in '54 . . .

Although 1953 was a record sales year, net earnings of most concerns continued to decrease proportionately. Costs, largely labor but also materials, continued to rise. Thus it became exceedingly difficult to lower prices on most manufactured products. And, notwithstanding the proportionately increased future net earnings due to lapse of EPT, price reductions will probably be only slight. With prices changing but little at the manufacturing level you would ex-

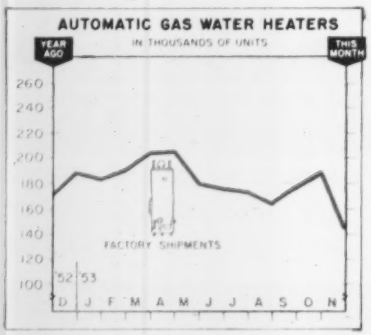


Gas Ranges

Shipments in Units

	1953	1952	1951
Jan.	169,200	166,100	260,600
Feb.	185,900	166,200	254,000
Mar.	208,200	185,200	289,800
Apr.	220,300	182,300	225,000
May	181,000	162,800	177,800
June	166,600	175,700	128,500
July	159,000	154,200	116,400
Aug.	186,800	178,600	168,100
Sept.	209,500	199,600	183,600
Oct.	215,800	239,700	210,900
Nov.	150,300	186,400	192,200
Dec.	.....	178,600	149,500
Total	.....	2,175,400	2,356,400

Gas Appliance Mfrs. Assn.

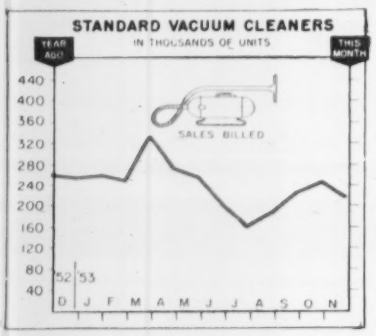


Automatic Gas Water Heaters

Shipments in Units

	1953	1952	1951
Jan.	184,000	148,700	225,600
Feb.	188,500	145,800	213,400
Mar.	203,000	153,300	223,300
Apr.	204,400	153,300	199,400
May	179,000	155,300	167,400
June	175,800	159,000	131,500
July	173,800	131,300	102,400
Aug.	163,900	161,500	124,400
Sept.	175,300	171,200	130,900
Oct.	189,200	185,300	148,800
Nov.	144,800	167,100	143,400
Dec.	.....	178,600	127,200
Total	.....	1,910,400	1,937,700

Gas Appliance Mfrs. Assn.

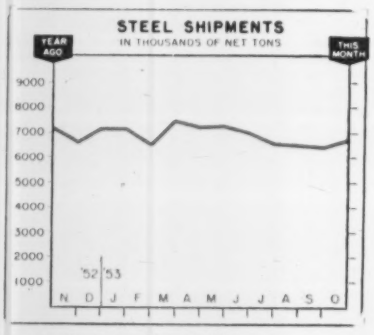


Standard Vacuum Cleaners

Sales Billed—Units

	1953	1952	1951
Jan.	255,886	223,357	282,305
Feb.	246,007	230,226	261,572
Mar.	329,294	290,092	290,242
Apr.	268,548	217,169	227,216
May	252,404	216,969	201,983
June	197,506	206,939	194,548
July	159,446	188,715	161,002
Aug.	188,536	222,413	191,299
Sept.	227,253	237,541	210,086
Oct.	249,383	292,474	259,469
Nov.	216,227	254,297	219,919
Dec.	.....	249,032	230,263
Total	.....	2,841,803	2,729,104

Vacuum Cleaner Mfrs. Assn.



Steel Shipments

Net Tons

	1953	1952	1951
Jan.	7,067,636	6,589,193	6,904,688
Feb.	6,533,227	6,358,293	5,776,229
Mar.	7,436,919	6,890,391	7,105,078
Apr.	7,162,460	5,922,173	6,634,510
May	7,209,396	5,947,450	6,938,708
June	6,950,059	1,250,243	6,645,897
July	6,582,513	1,413,672	5,988,574
Aug.	6,498,605	6,312,118	6,755,589
Sept.	6,400,757	6,542,147	6,207,491
Oct.	6,726,859	7,155,611	6,844,093
Nov.	.....	6,647,725	6,509,048
Dec.	.....	7,105,382	6,411,105

American Iron & Steel Institute

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Dec. 28	Gears	Dec. 21	Pumps	Nov. 16
Durable Goods	Dec. 14	Gray Iron Castings	Dec. 14	Radio, TV	Dec. 28
Employ., Metalwk.	Nov. 30	Indus. Production	Nov. 23	Ranges, Elec.	Nov. 2
Employ., Steel	Nov. 30	Ironers	Nov. 23	Refrigerators	Nov. 2
Fab. Struc. Steel	Dec. 21	Machine Tools	Dec. 7	Steel Castings	Dec. 14
Foundry Equip.	Dec. 21	Malleable Castings	Dec. 14	Steel Forgings	Dec. 7
Freight Cars	Dec. 28	Prices, Consumer	Dec. 7	Wages, Metalwk.	Dec. 28
Furnaces, Indus.	Dec. 7	Prices, Wholesale	Nov. 30	Washers	Dec. 21

pect little change at wholesale. That assumption is borne out by the averaged prediction of 107 companies' officers. They say the wholesale price index of the Department of Labor will drop less than 2 points—to 107.67 per cent of the 1947-1949 average—in the 12 months ending July 1, 1954, according to the National Association of Credit Men.

Extent of Wage Gains . . .

Anticipation of only slight price changes during 1954 underlines the economic importance of increases in disposable personal income. Besides the reduction in personal income taxes, most wage earners will probably receive raises. The average raise is expected to amount to from 5 to 8 cents per hour, according to John T. Dunlop, professor of economics, Harvard University.

Out of Circulation . . .

Continued easing of the money supply during the first half of the year will not only reflect the easing of business from year-ago levels but could also be the prelude to the expected rise of production during late 1954. M. Dutton Morehouse, executive vice president of the National Federation of Financial Analysts' Societies, says that in the short-term area, commercial and argricultural loans will decline $3 billion during the year while consumer credit drops $2 billion. Over-the-year slide in business loans has been occurring for several months and the lines of new credit have been decreasing since March.

Electric Demand Rises . . .

As a prelude to rising production in January, 8,150,000,000 kilowatt-hours of electricity were distributed in the week ended Dec. 26, the Edison Electric Institute says. This was an increase of 8 per cent over the corresponding week in 1952 and continued a rising trend started during the second week in December.

More Supporting Pillars . . .

Just as high electricity output reflects economic well being, so does a high level of construction. And

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	75.0	64.0	98.5
Electric Power Distributed (million kwhr)	8,200	8,150	7,713
Bitum. Coal Output (daily av.—1000 tons)	1,085	1,100	1,340
Petroleum Production (daily av.—1000 bbls)	6,234	6,248	6,594
Construction Volume (ENR—millions)	$153.2	$226.5	$185.0
Automobile, Truck Output (Ward's—units)	91,135	92,247	106,102
TRADE			
Freight Car Loadings (unit—1000 cars)	458[1]	481	563
Business Failures (Dun & Bradstreet, no.)	150	162	89
Currency in Circulation (millions)[3]	$31,009	$31,163	$30,424
Dept. Store Sales (changes from year ago)[3]	+12%	−1%	+59%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$15,283	$20,021	$16,384
Federal Gross Debt (billions)	$274.8	$274.8	$267.1
Bond Volume, NYSE (millions)	$12.5	$13.3	$12.6
Stocks Sales, NYSE (thousands of shares)	8 263	6 253	7,400
Loans and investments (billions)[4]	$80.9	$81.1	$78.8
U. S. Gov't Obligations Held (billions)[4]	$32.7	$33.0	$32.6
PRICES			
STEEL's Finished Steel Price Index[5]	189.74	189.74	189.74
STEEL's Nonferrous Metal Price Index[6]	205.5	206.2	215.4
All Commodities[7]	110.6	110.1	109.6
Commodities Other Than Farm & Foods[7]	114.5	114.4	112.9

[1]Dates on request. [2]Preliminary. [3]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [4]Federal Reserve Board. [5]Member banks, Federal Reserve System. [6]1935-1939=100. [7]1936-1939=100. [8]Bureau of Labor Statistics' Index, 1947-1949=100.

two factors that will help keep 1954 construction strong are booming commercial construction and public projects at the state and local level, says the Associated General Contractors of America Inc. Commercial building was held back by World War II and subsequent controls on materials and construction. It was considerably underestimated during 1953. During the past off-year general elections, the public demonstrated its willingness to authorize large bond issues to finance highways, schools and public utilities.

Year-Round Comfort . . .

The industry that may make the largest gains during 1954 is air conditioning. Fastest growing segment of the industry and the one with the greatest potential is year-round air conditioning of homes, says Cloud Wampler, president, Carrier Corp., Syracuse, N. Y. In 1953 the greatest proportion of such installations were in speculative low-cost homes. An even-greater market exists in the nation's existing homes, a field virtually untouched. Mr. Wampler believes it probable that the number of dwellings with complete year-round air conditioning should total about 2 million by 1958 and that central equipment for both new and existing homes should be selling at a rate exceeding 1 million installations a year ten years from now.

Preparation or Withdrawal? . . .

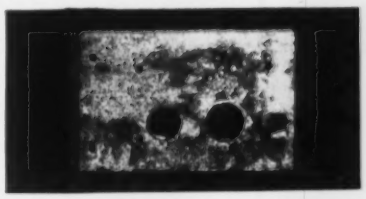
Individuals' preparation for a sliding-off from the 1953 production peak was evidenced by the changed composition of personal saving during the third quarter. Although total liquid saving of $3.3 billion during the third quarter was practically unchanged from the preceding quarter, personal holdings of currency and bank deposits rose by $1.6 billion, almost three times the increase of the second quarter, according to the Securities & Exchange Commission. Individuals appreciably decreased their purchases of new securities and shares in savings and loan associations.

Separating The Boys . . .

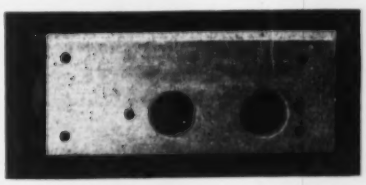
Greater competition in store for 1954 was underlined by the sharp, seasonal drop in the rate of new incorporations in November. Dun & Bradstreet says the number of new businesses formed during the month was 12.1 per cent below October and the lowest since November, 1952.

How Diebold, Inc.

keeps their SAFES SAFE from rust



This part from a Diebold safe door was covered with fingerprint neutralizer, then spotted with synthetic perspiration. In a matter of days destructive rust was apparent.



This Diebold safe door part was spotted with synthetic perspiration, covered with fingerprint neutralizer, then wrapped with Marvellum VPI. At the end of the test there was no indication of rust. The part was in the same excellent condition as the day it was made.

with MARVELLUM VPI WRAP

No wonder, after the tests shown above, Diebold Inc. chose Marvellum VPI® Wrap to protect their safes from rust. All ferrous metal parts are now kept wrapped from the moment they are made and each safe . . . large or small . . . is protected by Marvellum VPI before and during shipment. A special coating on the VPI paper vaporizes . . . forms an invisible protective film that positively prevents rust.

Marvellum VPI is easy to use . . . just fold the paper over the part. No need for time-consuming slushing or greasing. No mess or costly cleaning when the item is unwrapped. It's bright and clean, ready for immediate use.

You'll find many uses for Marvellum VPI in your plant . . . wrap steel parts, protect inventories, line tote boxes.

Marvellum VPI is available in rolls of 20, 30, 40 and 60 lb. paper stock and *can be individually imprinted with your trademark* on quantity orders. Envelopes, sheets, bags, shrouds and tubes are also available.

FREE BOOKLET
Gives you all the facts.
Send for your copy today.

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1 Appleton Street Holyoke, Mass.

more tons per dressing from

Ohio Rolls

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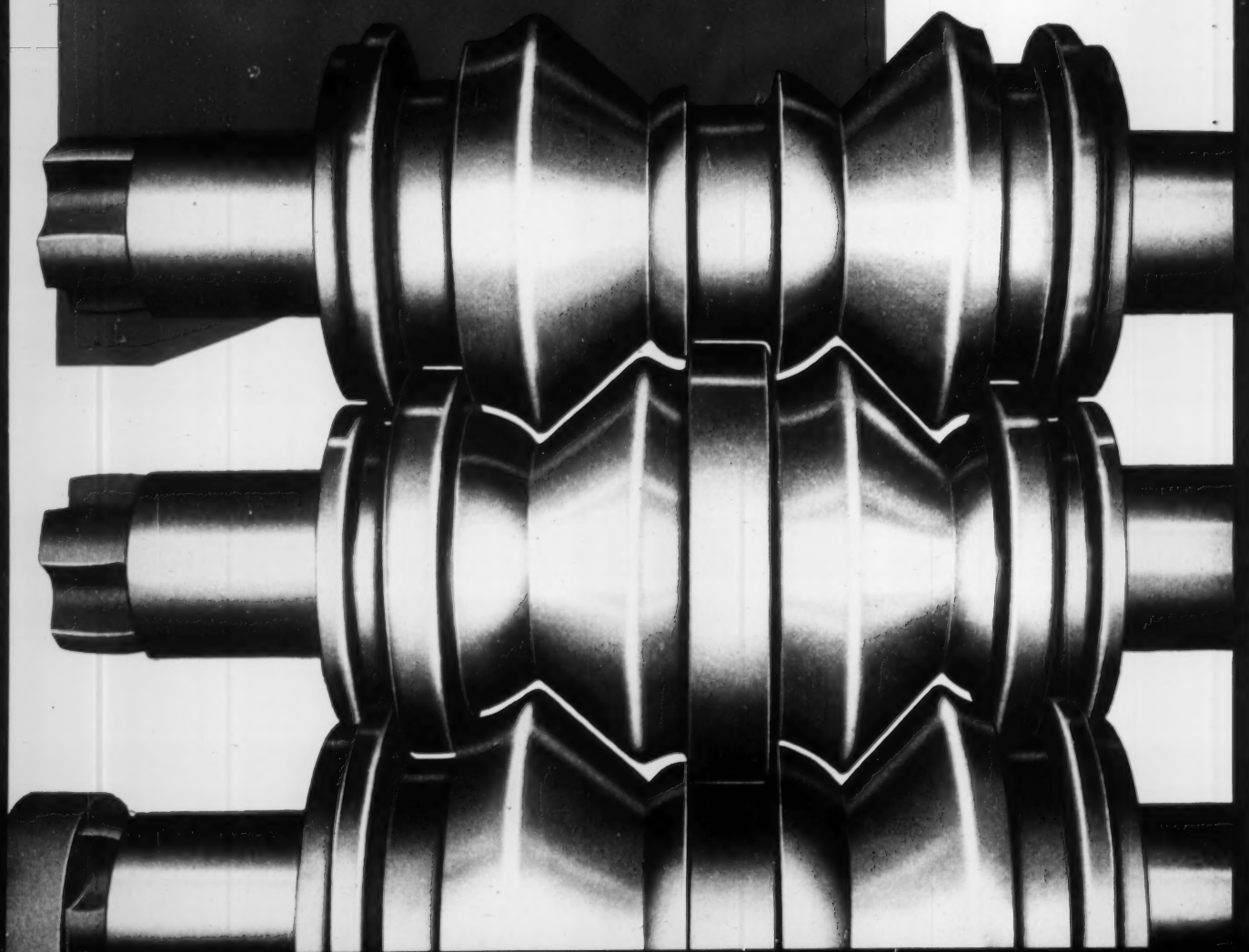
- Carbon Steel Rolls
- Ohioloy Rolls
- Ohioloy "K" Rolls
- Holl-O-Cast Rolls
- Chilled Iron Rolls
- Denso Iron Rolls
- Nickel Grain Rolls
- Special Iron Rolls
- Nioloy Rolls
- Flintuff Rolls
- Ohio Double-Pour Rolls



ROBERT E. WOLFF
. . . Illinois Tool div. marketing mgr.

DOUGLAS C. ALBRIGHT
. . . joins Coleman Co. as works mgr.

J. V. HONEYCUTT
. . . Bethlehem Steel v. p.-sales

Robert E. Wolff was appointed marketing manager, tool and machine division, **Illinois Tool Works,** Chicago. He joined the company in 1941 in the tool sales department. Since 1951 he has been assistant marketing manager of the division.

Universal Die Casting & Mfg. Corp., Saline, Mich., elected **William K. Meister** vice president in charge of manufacturing and **Leroy A. Hughes** vice president in charge of operations of Utilex Corp., subsidiary.

Harry S. Nau was made chief industrial engineer, **Mather Spring Co.,** Toledo, O., and **Arnold N. Kraft** was made manager of its Linden, N. J., plant. Mr. Nau was formerly with Ball Bros. Co., and Mr. Kraft was foundry division manager of Wilkening Mfg. Co.'s Philadelphia plant.

Charles Fahrner, formerly with Chicago Standard Transformer Co., joined **Electrical Windings Inc.,** Chicago, as chief engineer.

At **Edgcomb Steel Co.,** Philadelphia, **Harry I. Lutz** and **Frank F. Rose** were made vice presidents. **Vicente M. de Castro** was made secretary.

Frank A. Dieker was made general sales manager, **Liberty Radiator Core Mfg. Co.,** San Francisco.

Douglas C. Albright is now associated with **Coleman Co. Inc.,** Wichita, Kans., in the capacity of works manager. He was for five years general manager of the Marysville Division of Ainsworth Mfg. Corp. and has had 25 years' experience in design and production of precision cutting tools, automotive parts and aeronautical products.

Alexander McKnight, manager of the general commodities division, and **F. R. McIntosh,** manager of the ores and concentrates division, were appointed assistant vice presidents of **C. Tennant Sons & Co.,** New York.

William Van Der Sluys was named design division manager of **Pullman-Standard Car Mfg. Co.'s** engineering department, Chicago. He succeeds **A. M. Miers,** recently named manager of the firm's sales and service engineering division.

Donald L. Boyes was made general manager of **General Motors Corp.'s** Hyatt Bearing Division, Harrison, N. J. He succeeds **Raymond H. Cramer,** retired. Mr. Boyes was production manager of GM's central foundry division in Saginaw, Mich., previous to September, when he was made acting plant manager, Detroit transmission division's Riopelle street plant, which was reactivated following the Livonia, Mich., fire.

J. V. Honeycutt succeeds **Paul Mackall,** retired, as vice president-sales, **Bethlehem Steel Co.,** Bethlehem, Pa. Mr. Honeycutt, with Bethlehem since 1914, has been assistant vice president since 1936. Mr. Mackall joined the company in 1907. He became vice president in 1928 and was elected a director in 1932.

Reliance Electric & Engineering Co., Cleveland, appointed **C. V. Gregory** to the newly created post of manager of district sales. Formerly Pittsburgh district manager, he is replaced by **Elwood H. Koontz,** whose duties as branch manager of the Newark, N. J., sales office are assumed by **F. Raymond Obenchain. C. B. Allen Jr.** succeeds **J. L. Buell Jr.,** resigned, as Detroit district manager, and **Wilmer K. Schlotterbeck** succeeds Mr. Allen as district manager at Buffalo. **Antony C. Schettler** was made branch manager at Baltimore.

Frederick E. Munschauer Jr. was elected vice president in charge of manufacturing and industrial relations, a new position at **Niagara Machine & Tool Works,** Buffalo. He continues to serve as works manager.

A. Finkl & Sons Co., Chicago, appointed **Carl Gustafson** sales manager at Chicago, **James C. Vance** in charge of the Pittsburgh district

GUSTAV A. SCHWENK JR.

E. K. MANN JR.

. . . new vice presidents of Bohn Aluminum & Brass

and **Byron Scott** of the Detroit district.

Gustav A. Schwenk Jr. and **E. K. Mann Jr.** were elected vice presidents of **Bohn Aluminum & Brass Corp.**, Detroit. Since February, 1953, Mr. Schwenk has served as operations manager of the company and Mr. Mann as controller.

Russell L. Seiple was made manager of steel building products sales for Republic Steel Corp.'s **Berger Mfg. Division**, Canton, O. He succeeds the late **Martin C. Brown.**

Andrew Olson was appointed to the sales department of **S & S Machinery Co.**, Brooklyn, N. Y. He has served in executive capacities for the last 25 years in the aircraft and metals industries. During World War II he operated his own company, Olson Aircraft Supply Corp., in St. Louis.

Louis B. Polen was made manager of **Allegheny Ludlum Steel Corp.'s** Buffalo plant to succeed **Raymond J. Bryan**, retired.

Richard P. Connette was promoted to assistant vice president, **American Car & Foundry Co.**, New York. Since 1949 he has served as assistant to the president.

Latham E. Osborne, formerly executive vice president-defense products, **Westinghouse Electric Corp.**, Pittsburgh, was elected executive vice president and a director of the corporation. He is succeeded by **Leslie E. Lynde**, former vice president in charge of the aviation gas turbine division at South Philadelphia, Pa. Both men will have headquarters at Pittsburgh.

Dr. R. A. Lincoln, manager of sales development and engineering service, was appointed chief metallurgist of **Allegheny Ludlum Steel Corp.**, Pittsburgh, to succeed **Charles A. Scharschu**, retired.

W. H. C. Berg was made director of standards and research for **Hanson - Whitney Division**, Whitney Chain Co., Hartford, Conn.

L. S. Starrett Co., Athol, Mass., elected **Douglas R. Starrett** vice president in charge of plant operations and **Carl O. Newton** sales manager. **Donald E. Gilbert** replaces Mr. Newton as eastern sales manager. **Roy M. Peckham** becomes southern sales manager.

Robert L. Carlstein was made assistant production control manager at **Allis-Chalmers Mfg. Co.'s** West Allis Works, West Allis, Wis. He is replaced by **William H. Schrinner** as superintendent of material control.

Joseph A. Cademartori, formerly superintendent, **Elmes & King Division**, American Steel Foundries, Chicago, was made general manager. He succeeds **Charles F. Elmes**, vice president and general manager since 1943, who resigned to devote time to personal interests. **George C. Marakas** was placed in charge of sales for the division, and **Walther Rothacker** succeeds Mr. Cademartori as superintendent.

Raymond L. McFarland, formerly industrial branch chief, Toledo, O., regional Army Ordnance office, is now plant manager at Fostoria, O., for **Firth Machine & Tool Inc.**

Burt Heinrich was made plant manager of **Michigan Forging Co.**, Dearborn, Mich. For the last six years he has been manager of Ford Motor Co.'s forge plant at Canton, O.

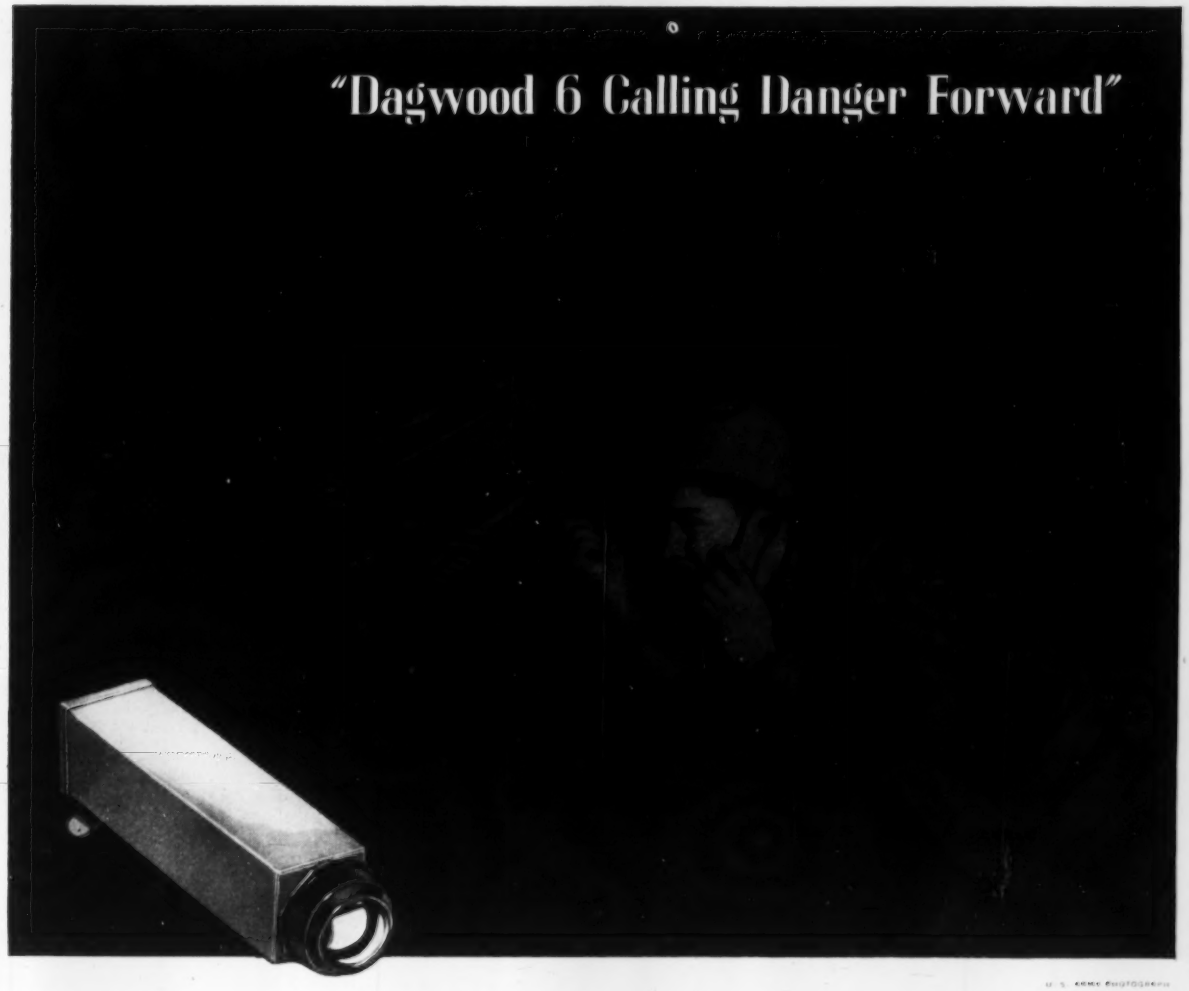
Schacht Steel Construction Co. Inc.,

DOUGLAS R. STARRETT

CARL O. NEWTON

. . . vice president and sales mgr. at L. S. Starrett

"Dagwood 6 Calling Danger Forward"



G.I. Joe now puts his calls through a new field switchboard twice the capacity and one-third the size of the one toted by his World War II counterpart.

The new "board" has a constitution that can winter in Rejkjavik, summer in Mombasa, and roll with a punch . . . just in case travel gets rough. Its retractable cords know when to come in out of the rain and goo.

Among the many essential parts of this instrument there is one named simply "SIGNAL, switchboard." It is a luminous-painted signal, operated by an electro-magnet, which "drops" into view when a line is calling. There's one "drop" for each telephone cord circuit; each drop is enclosed in a square housing made from Superior Hard Drawn Carbon Steel AISI C1008—.6815" I.D. Square, .020" wall, 2.656" long. Tolerances are close—±.005" on the length and +.007",—.000" on width.

Mr. Lloyd Bender, Vice President of The North Electric Manufacturing Company, makers of the switchboard, says of Superior, "Your performance has been excellent—in workmanship, quality of material and delivery."

Are you looking for a good small-tubing source—one that gives you the widest choice of tubing analyses available in America today, one that can supply you with one or one-million feet, one known for its uniformly high quality, and its interest in you and your tube problems? Try Superior. Superior Tube Company, 2005 Germantown Ave., Norristown, Pa.

Round and Shaped Tubing available in Carbon, Alloy, and Stainless Steels, Nickel Alloys, Beryllium Copper, and Titanium

Superior

THE BIG NAME IN SMALL TUBING

West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. UNderhill 0-1331

All analyses .010" to ⅝" O.D.
Certain analyses in Light Walls up to 2⅛" O.D.

HARRY M. REED
. . . Gerrard Steel Strapping v. p.-sales

C. E. BUCHAN
. . . Electric Machinery gen. sales mgr.

GUSTAVE H. FROELICH
. . . new position at Torrington Mfg.

Hillside, N. J., appointed **Heathcote W. Lawson** assistant chief engineer and **Lester E. Kastner** assistant controller.

Harry M. Reed was named vice president-sales, U. S. Steel Corp.'s **Gerrard Steel Strapping Division,** Chicago. Formerly central district manager, he is succeeded by **Richard G. Patterson.** Mr. Reed succeeds **W. B. Renois,** retired.

Jack & Heintz Inc., Cleveland, named **Robert G. Dobbin** manager of its commercial engineering section to direct activities on fractional-horsepower motors.

Robert L. McChain was appointed manager of coal mining machinery sales for Le Roi Co.'s **Cleveland Rock Drill Division,** Cleveland.

E. I. Whyatt, vice president-comptroller, Northwest Airlines Inc., was made assistant to the president of **Gould-National Batteries Inc.,** Trenton, N. J.

L. Dean Alspach, formerly of Beryllium Corp., is now representing **Penn Precision Products Inc.** in the Cleveland area.

C. E. Buchan assumes the newly created position of general sales manager, **Electric Machinery Mfg. Co.,** Minneapolis. For the last 25 years he has served as Cleveland district manager and is succeeded by **J. J. Wall,** formerly sales engineer in the New York district office.

William H. Gates was made manager of the southwest district of **Mine Safety Appliances Co.** at Tulsa, Okla. He succeeds the late **Harry W. Richards.**

Latrobe Steel Co., Latrobe, Pa., appointed **S. L. Weaver** district sales manager, Pittsburgh office. He was a sales representative for Latrobe in its Chicago territory.

Gustave H. Froelich, vice president, **Torrington Mfg. Co.,** Torrington, Conn., was appointed to the new post of general manager, machine division. He joined the firm in 1943 and became a vice president in 1946.

Kenneth D. Wayne joined the sales engineering staff of **Falleen Drop Forge Co. Inc.** in the eastern Michigan and northern Ohio areas. Before joining the Manistee, Mich., firm, he served Kropp Forge Ordnance Co. as general manager and Atlas Drop Forge Co.

James S. Crowell, formerly sales manager for Bissett Steel Co., now serves **Bliss & Laughlin Inc.** as Cleveland district sales representative. He has offices at 10006 Carnegie Ave.

Grant H. Arrasmith joined the engineering staff of American Brake Shoe Co.'s **Brake Shoe & Castings Division,** Mahwah, N. J.

Charles E. Heitman was named to the newly created post of assistant to the general manager, **A. O. Smith Co.,** Milwaukee. For the near future he will concentrate on administration of the automotive division which he has managed since 1946. At New York **Walter W. Stake** was made regional manager, eastern district, to succeed the late **Russell J. Irish. Allen O. Dragge** was made regional manager, Pacific Coast district, with offices at Los Angeles.

Thomas T. Crowley was made staff assistant to the executive vice president of **Crucible Steel Co. of America,** Pittsburgh.

Josiah G. Holland was elected a director of **Vanadium Corp. of America,** New York.

William Johansen, general sales manager, was elected vice president-sales, **Magnesium Co. of America,** East Chicago, Ind.

Seaporcel Metals Inc., Long Island City, N. Y., appointed **Hanford Gruher** sales manager.

Charles B. Baker, executive vice president, succeeds **Blaine S. Smith,** retired, as president, **Universal Atlas Cement Co.,** New York, subsidiary, U. S. Steel Corp. With the firm for more than 37 years, Mr. Smith continues as a consultant.

Arthur E. Russert, formerly with Sharon Steel Corp., was made Wisconsin district sales representative for strip steel by **Acme Steel Co.** He will have headquarters at Acme Steel's Milwaukee sales office.

E. T. Wilson Jr. of Portland, Oreg., was made sales representative, tubular products division, **Babcock & Wilcox Co.,** to cover Oregon, Washington, British Columbia, Alberta

Wickwire oil tempered wire . . .

STEEL RIBS FOR HEAVY UMBRELLAS, TOO

Not all oil tempered wire is used for springs. A typical example of its diversified applications is the familiar beach umbrella, also used on lawns and terraces, and in modified form on tractors, bulldozers and similar equipment.

For the steel ribs of these heavy umbrellas many manufacturers find Wickwire oil tempered wire ideal. This wire is stiff so as to retain its shape; uniform so that all wires bend the same; flexible so that the wires follow the contour of the umbrella; and ductile so that they may be easily swaged.

Wickwire oil tempered wire is available in a size range from .007″ to .5625″. Round wire can be supplied in coils or cut lengths. Wickwire also manufactures flat tempered wire.

High or low carbon steel . . . in all tempers, grades and finishes—For the Wire You Require; Check First With Wickwire.

THE COLORADO FUEL AND IRON CORPORATION · Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION · Atlanta · Boston · Buffalo
Chicago · Detroit · New Orleans · New York · Philadelphia

WICKWIRE WIRE

CFI PRODUCT OF WICKWIRE SPENCER STEEL DIVISION THE COLORADO FUEL AND IRON CORPORATION

1944

OSCAR J. DEMUTH
. . . Ehrhardt Tool & Machine gen. mgr.

CLYDE E. ROBERTS
. . . alloy steel sales mgr., Republic

DONALD W. OAKLEY
. . . Metal & Thermit plant mgr.

and Saskatchewan, Canada, area. He was formerly purchasing agent for Cascade Mfg. Co., an affiliate of Electric Steel Foundry and Hyster Co.

Oscar J. Demuth, superintendent of **Ehrhardt Tool & Machine Co.,** St. Louis, was appointed general manager of the company. He has been associated with the firm since its founding in 1937.

Durward P. Graham was appointed advertising and sales promotion manager for **Harper Electric Furnace Corp.,** Buffalo.

At **Republic Steel Corp.'s** alloy steel division, **Clyde E. Roberts** was made manager of sales. Formerly assistant manager, he continues headquarters at Massillon, O., where he succeeds **Martin H. Schmid,** retired after 44 years' service with Republic and predecessor companies. In the Enduro Division at Massillon, **John J. Kelleher** was made assistant superintendent.

Transferred from engineering to sales in the Chicago district office of **Holcroft & Co.** are **A. T. Krutak** and **Tom Gallagher.**

Donald W. Oakley, assistant plant manager, was promoted to plant manager of **Metal & Thermit Corp.'s** Carteret, N. J., plant. He succeeds **William T. Little,** retired.

John L. Peterson was appointed assistant open-hearth superintendent at the Midland, Pa., Works of **Crucible Steel Co. of America.**

Arthur Schroeder was named southeastern application engineer for **Warner Electric Brake & Clutch Co.,** Beloit, Wis. He will have offices in Brookhaven, Ga.

OBITUARIES . . .

Harold S. Fielder, 65, director of new products planning for **Cherry-Burrell Corp.,** Chicago, died Dec. 16.

C. L. Spatholt, manager of sales, reinforcing products, at Youngstown for **Truscon Steel Division,** Republic Steel Corp., died Dec. 22.

William E. Hitchcock, 84, president and founder in 1903 of **Atlantic Wire Co.,** Branford, Conn., died Dec. 24.

William F. McCarty, 72, died Dec. 21 at Riviera Beach, Fla. He had retired after seven years as chief engineer at **Lakeside Steel Improvement Co.,** Cleveland.

James E. Nolder, 44, head of **Nolder Steel Co.,** Chicago, died Dec. 26.

Raymond E. Dorries, partner in the nonferrous metal foundry of **F. Dorries & Sons,** Buffalo, died Dec. 25.

William E. Mosher, 76, former president and chairman of **United States Radiator Co.,** Detroit, who retired in 1945, died Dec. 21.

John A. Leisk, 80, who retired in 1950 as superintendent of foundries and pattern shops at **Allis-Chalmers Mfg. Co.,** Milwaukee, died Dec. 15.

Arthur F. Reum, 63, a director and vice president, **Standard Forgings Corp.,** Chicago, died Dec. 17.

Martin W. Henley, retired vice president, **Frazer & Jones Co.,** Syracuse, N. Y., died Dec. 18.

Lewis W. Mesta, 63, executive vice president, **Mesta Machine Co.,** West Homestead, Pa., died Dec. 30.

Burt E. Dohner, 70, president, **Ohio Metal Products Co.,** and vice president and treasurer of **Dayton Forging & Heating Co.,** both in Dayton, O., died Dec. 20.

H. L. Larimore, 65, who retired in 1951 as inside sales manager for **Bliss & Laughlin Inc.,** Harvey, Ill., died Dec. 22.

Henry S. Kane, 49, president, **North American Screw Products Co. Inc.,** Chicago, died Dec. 28.

Herbert A. Anderson, 52, president, **Sisalkraft Co.,** Chicago, died Dec. 27.

Bertram B. Caddle, 67, secretary of the **Copper & Brass Research Association,** New York, died Dec. 21.

Edward T. Garrity, 49, assistant sales manager, **Central Steel & Wire Co.,** Chicago, died Dec. 17.

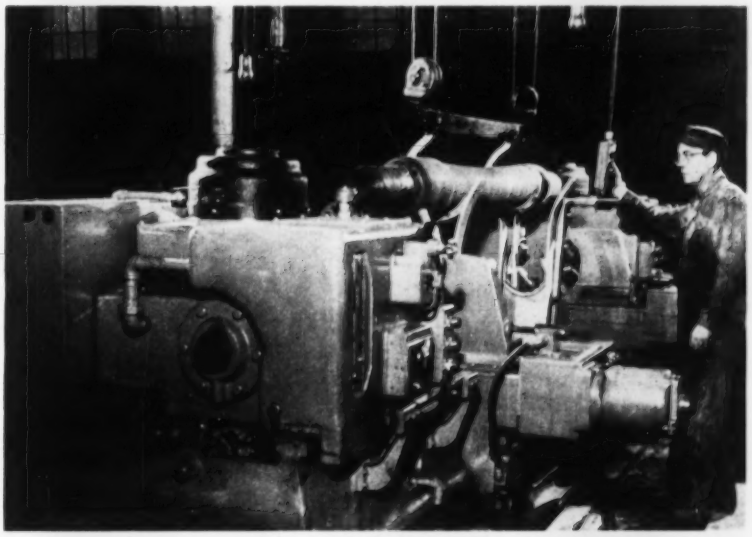
New Line Whips Axle Bottleneck

HIGH-PRODUCTION line for fitting roller bearings to freight car axles was unveiled recently by American Car & Foundry Co. at its Huntington, W. Va., shops. Now for the first time, says ACF, axle preparation for roller bearings can keep pace with car production.

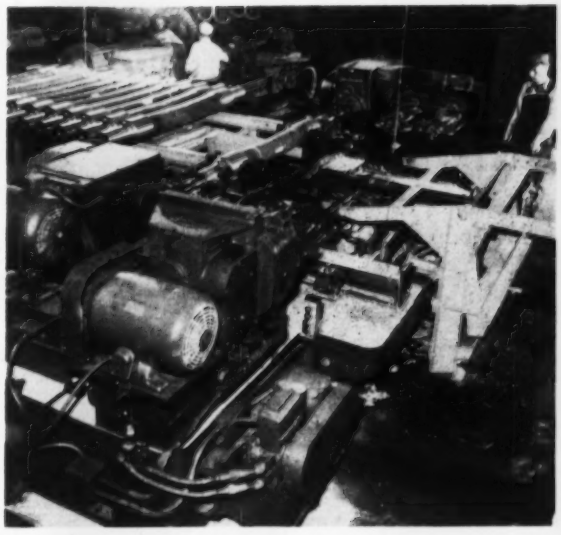
Five years of ACF development work show up in imaginative materials handling techniques and special high-precision machines. Most equipment is automatic once the axle is submitted to it.

The line is now turning out axles for 600 roller-bearing-equipped hopper cars for the Atlantic Coast Line Railroad.

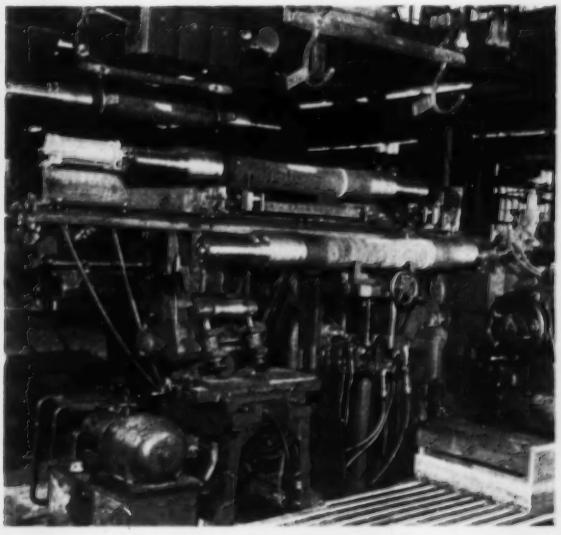
Monarch dual-carriage lathe, with air-gage tracer, finish turns both journals and dust guards simultaneously



As workman presses a button, rough axle is automatically loaded into Niles double-end axle-centering machine



After being machined on axle lathe, axles roll into a Baker Brothers' automatic two-way machine where they are drilled, countersunk and tapped at both ends at once



Hydraulic lift lowers nearly completed axles into this Cincinnati centerless grinder where the journal, dust collar and fillets are form-ground within close tolerances

When you want on any cutting-tool

here are 5 reasons to call your

MORSE-
Franchised
DISTRIBUTOR

1 COMPLETE LINE: Drills, Taps (including a new line of Special-Purpose Taps . . . and 7 new basic *and conversion* sets of Taps and Dies, handsomely boxed), Dies, Reamers, Cutters, End Mills, Counterbores and Countersinks.

2 AMPLE STOCKS: Your Morse-franchised Distributor is ready to supply you with the Morse Quality Cutting Tools you need. *New Morse methods of production, inventory control and expediting put him in a far stronger position in '53 than ever before.*

3 ON-THE-JOB EXPERIENCE: Your Morse-franchised Distributor knows his way around on cutting-tool applications, to give you *increased* production and *reduced* costs.

4 CLOSE CO-OPERATION FROM MORSE ENGINEERS: On any "cranky" or special problem, your Morse-franchised Distributor can immediately summon the help of Morse's top technical men.

5 PROVEN RESPONSIBILITY: Your Morse-franchised Distributor is a respected member of your business community. You can have full confidence, *as Morse has,* in him and his men.

THAT'S WHY IT'S ALWAYS GOOD BUSINESS TO
"CALL YOUR MORSE-FRANCHISED DISTRIBUTOR"

MORSE TWIST DRILL & MACHINE COMPANY, NEW BEDFORD, MASS.
(Division of VAN NORMAN CO.)
Warehouses in New York, Chicago, Detroit, Houston, San Francisco

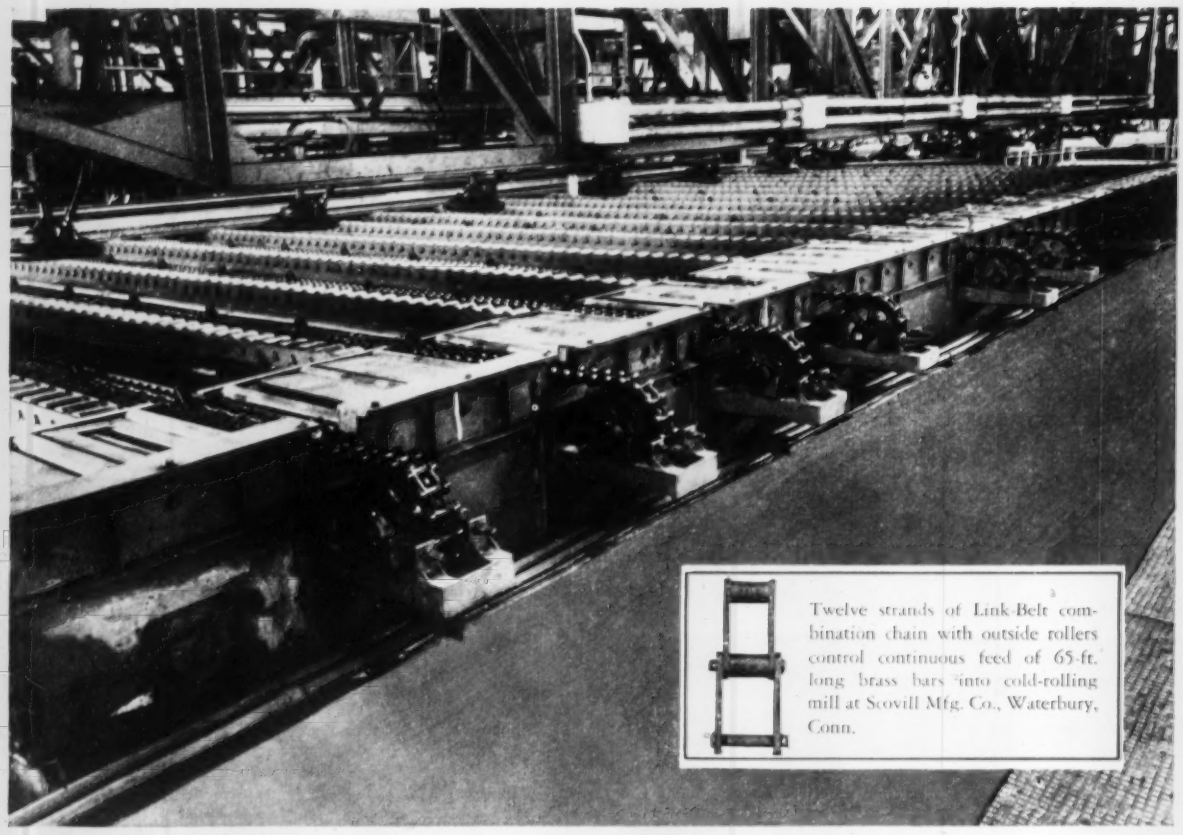
ACTION!

problem . . .

MORSE

Cutting Tools

Buy them by phone from your Morse-Franchised Distributor and save ordering time



Twelve strands of Link-Belt combination chain with outside rollers control continuous feed of 65-ft. long brass bars into cold-rolling mill at Scovill Mfg. Co., Waterbury, Conn.

What is the right chain for your drive or conveying job?

Typical chains from the complete LINK-BELT line

Class H drag chain—for drag conveyors, handling shavings or other refuse in runways or troughs.

Class C combination chain—popular, durable, low cost design for elevators, conveyors.

Class SS bushed roller chain with offset sidebars—for heavy drive service at moderate speeds.

Transfer chain with tilting dogs—for plate and slab travel, loads up to 300,000 pounds.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13.209-B

You'll find the answer in LINK-BELT's complete chain line... a size and type for every need

WHETHER it's a high-hp, heavy-impact drive or relatively slow-speed conveying service—you can get the *one* chain that best meets your needs from Link-Belt's complete chain line. Our engineers will be glad to work with you—help you select the right chain for your requirements. And you can be sure that any Link-Belt chain you buy is quality-built for longer life.

LINK-BELT

CHAINS AND SPROCKETS

Sawhill Merges Firms

Consolidated company to produce and fabricate pipe and tubular products

MERGER of Sawhill Mfg. Co., Mercer Tube & Mfg. Co., and Shenango Agaloy Tube Co., all of Sharon, Pa., into Sawhill Tubular Products Inc. was effective Dec. 31.

D. V. Sawhill, who was president of the three firms, is president of the merged firm which has a capital and surplus of about $8-million. The firm expects to have annual sales of $25 million in the initial operating year. Mr. Sawhill says the merger co-ordinates management and ownership.

Builds Plant—The firm is one of the outstanding producers and fabricators of pipe and tubular goods. It will open a $3-million plant containing 275,000 sq ft of floor space, early this year. The Mercer tube plant will be operated as Mercer Pipe Division, while the present Sawhill plant in Wheatland, Pa., will be operated as Sawhill Fabricating Division.

Besides Mr. Sawhill, other officers are James H. Flagg, executive vice president; Ray F. Eisenbies, vice president and general sales manager; Louis J. Wiesen, secretary and general counsel; Ray W. Rowney, treasurer; Carl E. Jones, vice president in charge of tubing sales; Edward F. Resch, vice president in charge of Fabricating Division sales.

Directors include these officers and Claire B. Sawhill; Donald B. Sawhill; Frank R. S. Kaplan, president, Copperweld Steel Co., Glassport, Pa.; and John H. Lucas, Pittsburgh banker.

Mr. Sawhill organized Sawhill Mfg. Co. when he bought John H. McCloy & Co. Inc., Bridgeville, Pa., in 1926. He renamed it and moved the plant to Wheatland, Pa., in 1940. He served as receiver for Mercer Tube in 1933, subsequently acquiring controlling interest. He organized Shenango Agaloy Tube Co. in 1951.

Bridgeport Leases Plant

Bridgeport Brass Co. has leased the aluminum extrusion and forging plant of the U. S. Air Force Materiel Command at Adrian, Mich. Bridgeport will make aluminum extrusion tubes and forgings for military airplanes as well as aluminum extrusion rod, wire and tube for commercial customers.

The Adrian plant is equipped with 16 extrusion presses of various sizes up to a 5500-ton press.

IBM Plans $4-Million Plant

International Business Machines Corp. will erect a $4-million factory in Endicott, N. Y. The new building will have 139,200 sq ft of floor space and is scheduled for completion by next July.

Smith Iron Plans Expansion

A. L. Smith Iron Co., Chelsea, Mass., acquired 175,000 sq ft of manufacturing space for expansion of its Smithcraft Lighting Division. This will double manufacturing facilities for production of fluorescent lighting equipment.

DeWalt Forms Subsidiary

DeWalt Inc., Lancaster, Pa., manufacturer of wood and metal cutting machinery, formed a Canadian subsidiary, DeWalt Canada Ltd., Guelph, Ont. DeWalt Inc. is a subsidiary of American Machine & Foundry Co., New York.

Dayton Malleable Buys Plant

Dayton Malleable Iron Co., Dayton, O., purchased Ohio Malleable Iron Co.'s plant in Columbus, O., and plans to curtail operations sharply at its Dayton plant. The Columbus firm was purchased from its parent company, Galion Iron Works & Mfg. Co., Galion, O.

Cleveland Crane Opens Branch

Cleveland Crane & Engineering Co., Wickliffe, O., opened a direct factory office at 2361 Penobscot Bldg., Detroit, for the sale and service of metal-forming presses and shears.

Firestone Producing Shells

Firestone Tire & Rubber Co., Akron, has completed conversion installations at its New Bedford, Mass., plant for the production of 155-mm shells. Additional equipment includes a 340-ton hardening furnace and several three-story forging presses.

24-Ton Forging

This spool-like forging is a 24-ton stub shaft for a compressor built at Westinghouse Electric Corp.'s Sunnyvale, Calif., plant for the Air Force wind tunnel at Tullahoma, Tenn.

Chemical Firm Moves Branch

American Chemical Paint Co., Ambler, Pa., producer of rust-proofing chemicals, phosphate-coating chemicals, metal cleaners, rust removers and pickling acid inhibitors, moved its Detroit office to 10225 W. McNichols Road.

Castingsmaker Names Agent

National Alloy Division, Blaw-Knox Co., Pittsburgh, appointed Metallurgical Products Co., Brookline, Mass., as its distributor in New England. Metallurgical Products has representatives in Salem, Mass., Wethersfield, Conn., and Schenectady, N. Y. National Alloy Division produces heat, corrosion and abrasion resisting castings.

Hackney Hits Century Mark

Hackney Bros. Body Co., Wilson, N. C., manufacturer of refrigerator truck bodies and school bus bodies, is celebrating its 100th anniversary this year. T. J. Hackney, third generation of the founding family to head the company, says the company will start its 101st year in a completely new plant.

equipped with the most modern tools and equipment, including shears, brakes, presses, punches and other steel fabricating types of machinery. For assembly, various types of spot welding equipment, arc welding equipment, riveting equipment, etc. are used.

Carboloy Appoints Agent

Mahar Tool Supply Co. Inc., Saginaw, Mich., has been named a distributor for General Electric Co.'s Carboloy Department, Detroit.

Ruger Opens Detroit Warehouse

Ruger Equipment Inc., Uhrichsville, O., manufacturer of hydraulic cranes, opened a factory branch sales office and warehouse at 18509 James Couzens Highway, Detroit. C. L. Jackson is in charge of the new facility.

Avco Consolidates Divisions

Avco Mfg. Corp., New York, consolidated its Lycoming - Spencer and Bridgeport-Lycoming divisions into a single Lycoming Division with S. B. Withington as general manager. The move was made to simplify administration, expand and integrate research and strengthen its competitive position in the fields of engine and precision parts manufacture, foundry production and other manufacturing operations.

GE Plans Michigan Plant

General Electric Co., Schenectady, N. Y., plans to build a multimillion-dollar plant and headquarters at Holland, Mich., for its hermetic motor department. Present plans call for breaking ground next spring and for manufacturing to start early in 1955.

Forms Matteson Equipment Co.

Matteson Equipment Co. Inc. was formed in Poland, O., to sell finishing equipment used in the flat-rolled steel and nonferrous metal industries. Matteson will specialize in strip processing, tinning, galvanizing and pickling equipment. Production is now being done by fabricators. E. A. Matteson is president and Andrew Sabol, vice president. Mr. Matteson was formerly sales manager of Aetna Standard Engineering Co., Youngstown.

Electric Steel Moves Branch

Electric Steel & Foundry Co., Portland, Oreg., moved its branch headquarters to larger quarters at 1311 W. Hanford St., Seattle.

Phoenix Iron Orders Furnace

Selas Corp. of America, Philadelphia, is installing a continuous reheating furnace for seamless pipe in the plant of Phoenix Iron & Steel Co., Phoenixville, Pa., a subsidiary of Barium Steel Corp., New York.

The furnace will be capable of reheating up to 18-in.-diameter seamless tubes which come from the piercing mill and require reheating from about 1200° F to 1800° F to permit passage through the sizing mill for producing an accurately dimensional seamless tube. A novel feature provides for control of temperature in a manner which will prevent automatically any tube which is not at the exact predetermined temperature from entering the mill.

The installation will consist of seven-in-line furnaces with automatic variable speed conveyor equipment synchronized with mill speed. The entire mill project has been engineered to produce large, heavy-wall seamless pipe not now manufactured in the United States but required for many important purposes.

Dedicates $1-Million Plant

Grayson - Greenamyer Appliance Controls Division, General Controls Co., Glendale, Calif., dedicated a 120,000-sq-ft, $1-million plant for production of automatic pressure and temperature controls for industry, homes and jet aircraft.

Trimedge Shifts Operations

Trimedge Inc., Youngstown, is increasing its operations at its plants in Newnan, Ga., and Hollywood, Fla., and is reducing operations at its Youngstown plant. The firm makes aluminum extrusions, decorative trim and other aluminum products.

Trane Co. Moves Branch

Trane Co., La Crosse, Wis., manufacturer of air conditioning, heating and ventilating equipment, moved its Oklahoma City, Okla., sales office to 819 N. Virginia St.

Pangborn Observes 50th Year

Pangborn Corp., Hagerstown, Md., manufacturer of blast cleaning and dust control equipment, is celebrating its 50th anniversary this year. The firm's facilities now include a foundry; plate, sheet metal and machine shops; assembly plants; paint and woodworking shops. Official birthday of the firm is Sept. 1.

Price Buys Battery Plants

Dayton, O., plants of Monark Battery Co. and Red-Bar Battery Co. were sold to Price Battery Corp., Hamburg, Pa. The Dayton operations will be moved to Wapakoneta, O., where a plant with 50,000 sq ft of floor space was purchased. The sale included equipment, inventory, raw materials and products in process.

Glenn L. Martin Expands

Glenn L. Martin Co., Middle River, Md., plans to build a 6500-sq-ft addition for the manufacture of electromechanical airplane components. The company recently completed a 90,000-sq-ft addition to its engineering building and a balcony in one of its manufacturing buildings at a cost of about $2-million.

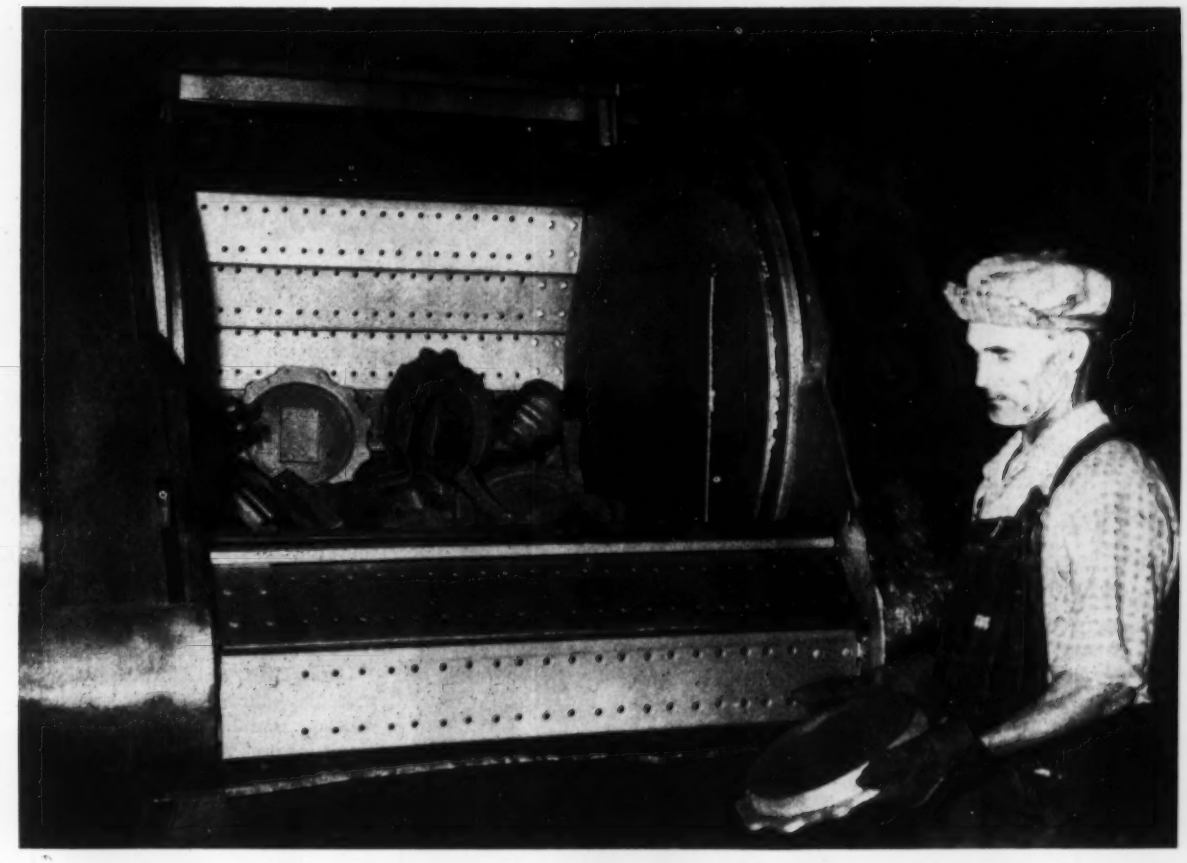
Lusk Inc. in Full Operation

Lusk Inc. is in full operation at Anaheim, Calif. The firm specializes in aircraft, mechanical and tool engineering along with tool and die fabrication and design and development of special machines.

Engineering Firm Names Agent

Fairfield Engineering Co., Marion, O., designer and manufacturer of coal handling and storage installations and conveying equip-

pioneering developments keep WHEELABRATOR® first in blast cleaning



Replaces 12 Machines—Saves 56 Man-hours Daily

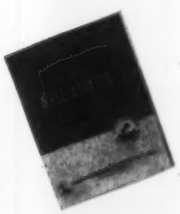
Returns Entire Investment Within One Year At The Fate-Root-Heath Company

Another typical example of the cost-and-time-saving performance of Wheelabrator airless blast cleaning equipment is this gray iron foundry installation at The Fate-Root-Heath Company. One Wheelabrator Tumblast replaced 12 tumbling mills formerly used for cleaning gray iron castings weighing up to 400 lbs. each. 500 pound loads of castings are cleaned in from 3 to 5 minutes, and the castings are so clean they "look as if they had been painted with aluminum paint."

At the same time man-hour requirements were drastically slashed. Whereas it had required 6 men on the day shift and 2 at night to operate the tumbling mills, only one operator is now needed—a saving of 56 man-hours daily. On the basis of these labor savings alone, the Wheelabrator has paid for itself in less than a year's time.

Operating costs are extremely low and recently they have been further reduced through the use of Wheelabrator Steel Shot in the machines. Switching to this superior electric furnace steel shot resulted in a 600% increase in parts life and greatly improved overall cleaning results.

Why pay a premium for inferior methods of cleaning when an airless Wheelabrator will clean your work faster, more thoroughly, at lower cost?



Bulletin 74-B tells "What the Wheelabrator is and What it Will Do For You." Send for your copy today.

American Wheelabrator®
AIRLESS BLAST CLEANING

WHEELABRATOR & EQUIPMENT CORP.
509 S. Byrkit St., Mishawaka, Ind.

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

ment for handling and storing bulk materials, appointed Hank Thurstin Co., Denver, as its representative in that area.

Remco Consolidates Operations

Remco Inc., Baltimore, manufacturer of domestic oil storage tanks at 1017 Greenmount Ave. and screw machine parts at Monumental Ave., Lansdowne, Md., is consolidating operations at the latter plant. M. E. Michel is president.

Buys Crown Controls Inc.

Trimount Instrument Co., Chicago, acquired Crown Controls Inc., Detroit. Production of controls are being moved to the new owner's Chicago plant.

Maine Facility Reactivated

South Portland, Me., shipyard, closed following World War II, now has 20 industrial firms operating in the plant. Companies range from a one-man lobstertrap job to the large Walsh-Holyoke electric welded pipe fabrication project for atomic energy installations. Most activity is in metalworking.

Atlas Mineral Names Agent

Atlas Mineral Products Co., Mertztown, Pa., appointed O. A. DeCelle & Associates, Chicago, as its midwestern representatives.

American Hydromath Moves

American Hydromath Corp. moved its offices and plant to 25-20 43rd Ave., Long Island City 1, N. Y.

Dynamatic Division Formed

Dynamatic Corp., Kenosha, Wis., is now a division of Eaton Mfg. Co., Cleveland. It was operated previously as a subsidiary with Martin P. Winther as president. Dynamatic Division manufactures original and component products for the automotive, petroleum, cement, rubber, paper, machine tool, electrical equipment and other basic industries in which rotating machinery is used.

MAGCOA Buys Tobey Mfg.

Company will increase production of lightweight materials-handling equipment

RISING demand for materials-handling equipment made of light metals has led to purchase of Tobey Mfg. Corp., El Segundo, Calif., by Magnesium Co. of America, East Chicago, Ind.

Tobey will be operated as the Tobey Aluminum Division of MAGCOA with Michael Neushul as vice president and manager of the division.

"Purchase of Tobey, a pioneer in the development of aluminum

MILES L. ABEL
. . . *Exec. v.p. of MAGCOA*

materials - handling equipment, rounds out our lines, complements our magnesium products with aluminum products, and prepares us to meet fully the seemingly limitless demand for materials-handling equipment made of light metals," says Miles L. Abel, executive vice president of Magnesium Co. of America.

"Demand for materials-handling devices made of aluminum and magnesium is steadily enlarging. Our business increased 32 per cent in 1953, and the addition of the facilities and specialized aluminum products of Tobey Corp. should make possible an even greater increase in sales this year."

Postwar Developments — Tobey Mfg. Corp., during the postwar period, developed a highly successful line of aluminum four-wheel platform trucks, now commonly seen at airports and in industrial plants. In the same period, Magnesium Co. pioneered in the development of magnesium equipment, especially dockboards and portable ramps (STEEL, Dec. 28, p. 56).

"The major product lines of both companies will be continued and enlarged in the months ahead," Mr. Abel says. "The only change to be expected is greater exploitation of the existing large market as the result of the newly combined manufacturing, financial and sales resources of the two companies."

Republic Seeks Iron Ore

Republic Steel Corp., Cleveland, recently signed an exploratory option for iron ore properties in the foothills of the Andes Mountains near Lima, Peru.

Luria Appoints Erie Manager

Luria Bros. & Co. Inc., Philadelphia, appointed Merle Nobel as resident manager of its office and plant located at 1154 W. 16th St., Erie, Pa. Luria has 17 offices and 6 plants located in leading foundry and steel centers of the United States.

Simplex Opens Branch Plant

Simplex Wire & Cable Co., Cambridge, Mass., is producing submarine cable in a recently completed branch plant at Newington N. H.

Beryllium Corp. Names Agent

Beryllium Corp., Reading, Pa., appointed New York Brass & Copper Co., New York, as a warehousing distributor for its wrought beryllium-copper products.

Plans Electronic Parts Plant

Anderson-Nichols & Co., Boston, consulting engineers, have leased about 11,000 sq ft at 1701 Inverness Ave., Baltimore, which they will equip for the manufacture of light electronic parts. The company has previously designed and developed electronic and mechanical units, but has not hitherto

"57,000 Investors in Democracy"

HENRY FORD II

President, Ford Motor Company

"In the most practical way possible—the regular purchase of U.S. Savings Bonds—millions of Americans are demonstrating complete confidence in our form of government. Investors in democracy, they are freely staking their personal security on a fundamental faith in the future of our nation. I am proud that today more than 57,000 Ford Motor Company employees are participating in the Payroll Savings Plan. Last year they bought bonds worth $25,000,000 at face value, and this year the total of their purchases will be even greater. Through their thrift they are helping to keep America strong."

Few investment groups are as important to America as the members of the Ford Payroll Savings Plan. They are *important* in size—57,000 men and women . . . important in buying power—they actually purchase $25,000,000 in Savings Bonds every year . . . and *very* important to our economic stability—"through their thrift they are helping to keep America strong."

"Oh," someone may say, "Ford is a big company and they do things in a big way. It's easy for Ford to get thousands of people to sign up for the Payroll Savings Plan."

It was relatively easy for Ford, and it is easy for any company, large or small, to build a good Payroll Savings Plan *if*—(1) The head of the company recognizes the importance of the Payroll Savings Plan to the employees, the company, and the country; (2) *If* he will show the same degree of personal interest that Mr. Ford takes in the Ford Payroll Savings Plan.

If you would like to match Mr. Ford's Payroll Savings record—percentage-wise, of course—all you have to do is to see to it that a Payroll Savings Application Blank is placed in the hands of every man and woman in your company. It will help, of course, if you remind them, over your signature, that the Payroll Savings Plan is a safe and sure road to personal security.

The Savings Bond Division, U.S. Treasury Department, Washington, D. C., is ready to provide all the help you need in the way of Application Blanks, literature, and a complete outline of a simple, person-to-person canvass that will put an application blank in the hands of *every* one of your employees. Your employees will do the rest.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

STEEL
THE WEEKLY MAGAZINE OF METALWORKING

gone into their manufacture. E. Ross Anderson, senior partner, has offices at 150 Causeway St., Boston.

Diamond Heads Institute

Grant S. Diamond, president, Electro Refractories & Abrasives Corp., Buffalo, was elected vice president of Grinding Wheel Institute, Cleveland.

Buys Electrical Product Lines

Pyle-National Co., Chicago, manufacturer of electrical and air conditioning equipment for railroads and industry, purchased the patterns, tools, dies, jigs, fixtures and inventory of two lines of electrical products from Adapti Co., Cleveland. These products consist of conduit fittings and lighting fixtures.

Hoffman To Triple Output

Hoffman Co., York, Pa., is operating its new plant which has twice the floor area of former quarters. Through more efficient shop planning and improved shop practices, the company expects to more than triple output of metal baskets, trucks, racks and other materials handling equipment.

Toolmaker Opens Plant

Judson & Rose Inc., maker of special tools, moved into its new plant at Tulip and Westmoreland streets, Philadelphia 34.

Gear Works Consolidated

Pacific Gear & Tool Works, San Francisco, was consolidated with Western Gear Works, Seattle, and the merged firms will operate under the latter name. Thomas J. Bannan is president.

Clifford Metal Gets Agency

Clifford Metal Sales Co., Providence, R. I., was appointed distributor in that state for continuous-cast bronze products of American Smelting & Refining Co.'s Perth Amboy plant in Barber, N. J.

Disinger Organizes Firm

Leon P. Disinger, formerly vice president and sales manager of Buckeye Brass & Mfg. Co., Cleveland, organized an engineering and sales firm known as Leon P. Disinger & Associates with headquarters at 3383 Chelsea Drive, that city. The firm is specializing in the entire casting field.

Reynolds Names Distributor

Reynolds Metals Co., Louisville, appointed Kasle Steel Corp., Cleveland, as distributor for its mill products in that area.

Forms Canadian Subsidiary

Thermo Electric Co. Inc., Rochelle Park, N. J., organized Thermo Electric (Canada) Ltd., Brampton, Ont. The new company will manufacture and sell industrial temperature-measuring equipment and aircraft specialties.

Furnace Maker To Build

C. I. Hayes Inc., Providence, R. I., manufacturer of electric heat-treating furnaces, plans to build a plant in Cranston, R. I. The plant would double current facilities for production and research activities.

Baltimore Fabricator Moves

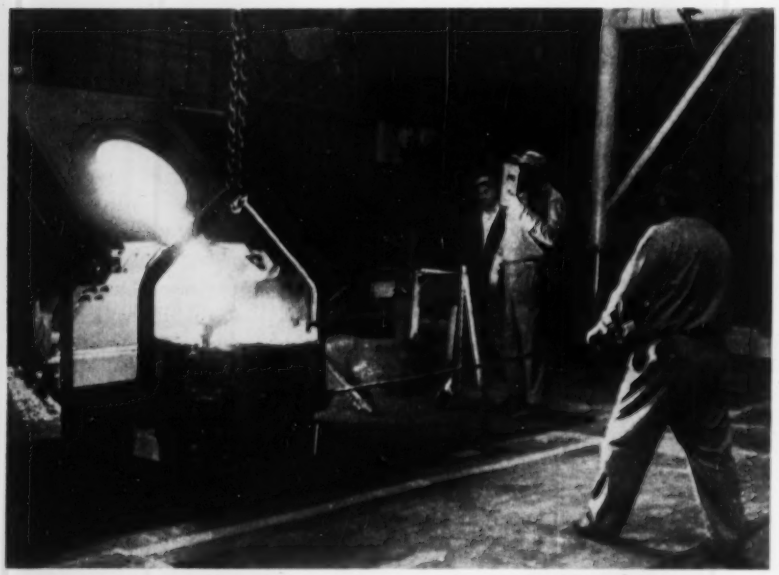
Sheet Metal Fabricators Inc. moved into larger quarters at 1502 Roland Heights Ave., Baltimore. Christian P. Klapproth is president.

Bossert To Build Addition

Bossert Division, Rockwell Spring & Axle Co., Utica, N. Y., will construct a plant addition.

Bearing Firms Merge

Stockholders approved the acquisition by Federal-Mogul Corp., Detroit, of the property, assets and business of Bearings Co. of America. Initially, Bearings Co. will be operated as a division of Federal-Mogul in charge of J. W. Brady, formerly president of the Lancaster, Pa., firm. Bearings Co. manufactures radial bearings, angular contact bearings and thrust bearings. Federal-Mogul's principal products are sleeve bearings, bushings and thrust washers; the firm also is the exclusive world-wide distributor in the service field of Bower tapered and straight roller bearings.



Electric Induction Steel Flows at Heppenstall Plant

Tapping a heat of electric induction steel was one of the spectacular operations seen by visitors to Heppenstall Co., Pittsburgh, during a plant open house. The company's E. I. S. steel is used in the manufacture of its shear knives and chipper knives. Production of alloy steel ingots in a high-frequency electric-induction furnace is unique in that the heat is generated within the charge. In all other melting processes, heat is applied externally and is then absorbed by the mass

Caterpillar

REG. U.S. PAT. OFF.

. . . in one time-cycle . . . on a single machine . . . and faster

JOB FACTS:

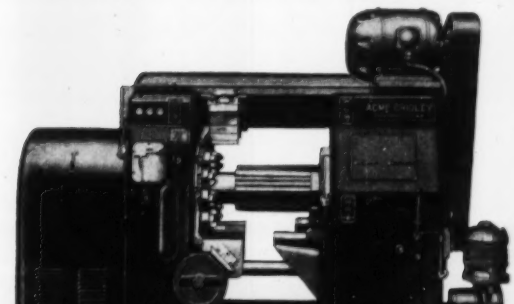
PART—Track Roller Bushing
SIZE—4½" diam. x 2¾" long
MATERIAL—Cast Iron
OPERATIONS—22, Carbide Tooling
MACHINE TIME FOR ALL OPERATIONS—43 seconds, 83 pieces per hour

CATERPILLAR Tractor Company is the world's largest producer of crawler type tractors. As they grow bigger each year, they specify larger heavier, more costly automatic machines—in this case a 20-ton, 8-spindle hydraulic chucker, for repeated runs on the part illustrated as well as others.

A fair question to ask is "Why the investment, why not do the job the single spindle way, or on 4-spindle automatics—why use 8-spindles?"

Plainly because they know the value of man-hours and floor space—have long since proved through comparison of actual cold cost production figures that the lowest machining costs yet possible are obtained by 2-at-a-time planning with

ACME-GRIDLEY 8-SPINDLE AUTOMATIC CHUCKING MACHINES



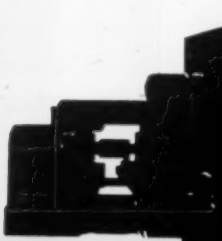
8 SPINDLE 8" ACME-GRIDLEY CHUCKER—
built also in 4 and 6 spindle models and in sizes 5¼" to 12".

Here's how they do it...

• the advantages are basically 3...and they interlock—

1. **MORE SPINDLES**—with double index to finish both ends of the piece at the same time—more tools with one machine, one operator and in a cycle time that is always controlled.
2. **BROADER BASE**—adaptability to similar jobs—through interchangeability of tools, attachments, cams and gears—reducing the change-over costs and inventory.
3. **EXPERIENCE AT SOURCE**—Caterpillar knows that Acme-Gridley basic design, stamina and tool engineering to solve new problems are dependable—never let you down.

This is just another example among thousands based on our 55 years since we produced the first "multiple." Maybe your chucking problems are simpler, which makes it easier for you and for us. Why not find out, anyway?



The NATIONAL ACME COMPANY

170 EAST 131st STREET • CLEVELAND 8, OHIO

ACME-GRIDLEY BAR and CHUCKING AUTOMATICS
1-4-6 and 8 Spindle • Hydraulic Thread Rolling Machines • Automatic Threading Dies and Taps • Limit, Motor Starter and Control Station Switches • Solenoids •

JONES & LAMSON REPORTS ITS RESEARCH ON COST-CUTTING IN THE metal turning INDUSTRY

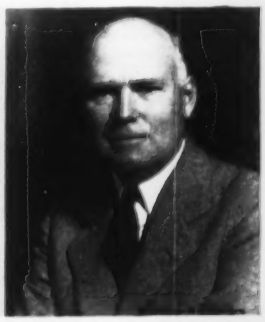
Jones & Lamson Research is Paying Off — For All of Industry!

Here are the facts:

- Over the past eight years, J&L has invested heavily, in manpower, money and facilities, to probe the possibilities of High Velocity Turning.
- More than 12,000 tests have been made, in an attempt to determine the relationships of metals, cutting speeds, tools and tool geometry.
- The results are staggering: many long-held theories have been discarded; new techniques, new tools, new cutting standards have evolved.
- *All* of industry is benefiting from this program of research, for J&L freely shares its findings. In two-day "Production Studies" Seminars, held periodically at Springfield, Vt., groups of visiting key production men are given a comprehensive briefing, and study actual on-the-job demonstrations. Back at their own plants, this new knowledge is translated into better quality, higher production, lower costs.

"Our findings indicate that throughout industry, metal-cutting efficiency can be increased from 30% to as much as 300% – often with existing machines – by using new High-Velocity Turning techniques. Seldom has industry been offered as great an opportunity to cut costs".

JOHN E. LOVELY
Vice President & Chief Engineer
Jones & Lamson Machine Co.



PRODUCTION P.S. STUDIES

J&L's new movie, "Research in Metal Cutting", has been described by E. Willard Pennington, Editor of "Tooling & Production", as "the finest industrial movie I have ever seen." Available for showing, on request.

JONES & LAMSON MACHINE COMPANY

SPRINGFIELD, VERMONT, U. S. A. • TURRET LATHES • FAY AUTOMATIC LATHES
THREAD GRINDERS • OPTICAL COMPARATORS • THREADING DIES

STEEL

January 11, 1954

Technical Outlook

RARE EARTHS—They're making a name for themselves in metallurgy, says William E. Knapp of the American Metallurgical Products Co., Pittsburgh. He predicts, for example, that commercially-practical, high-temperature aluminum alloys (having safe operating properties at 700 to 800° F) will be developed using rare earths in metallic form.

NEW MODEL— R2 instrument bearing (used in gyroscopes, for example) has been revamped and given a new name, Micro R2. It features a ribbon-type, balanced, cone-controlled retainer that cannot wind up, hang up or fall out. Result is a low and repetitive starting torque in one bearing and from one bearing to another, according to New Hampshire Ball Bearings Inc., Peterborough, N. H.

FIGHTING FIRE—It doesn't make too much difference whether you construct your buildings of brick, steel, concrete or wood . . . as long as you avoid wooden walls and quick-burning boards on joists, roofs and floors. So stated W. K. Ousley, vice president, Boston Manufacturers Mutual Fire Insurance Co., before the SAE this week in Detroit. Basic question, he said, is: "How much of the plant can I afford to lose?" Other tips: Install sprinklers for all combustibles, provide enough water, train your people in fire safety, provide wholehearted support by top management.

POROSITY TAMED— Biggest deterrent to fuller use of shielded, inert-gas, metal arc welding on carbon steel has been porosity of weld metal. One way to lick it, say Linde engineers, is by using a whipping technique (rapid, longitudinal oscillation of torch along joint) which has been effective with the most troublesome steel compositions. Using a special deoxidized experimental wire, they eliminated porosity on both butt and fillet welds without altering welding technique in the slightest.

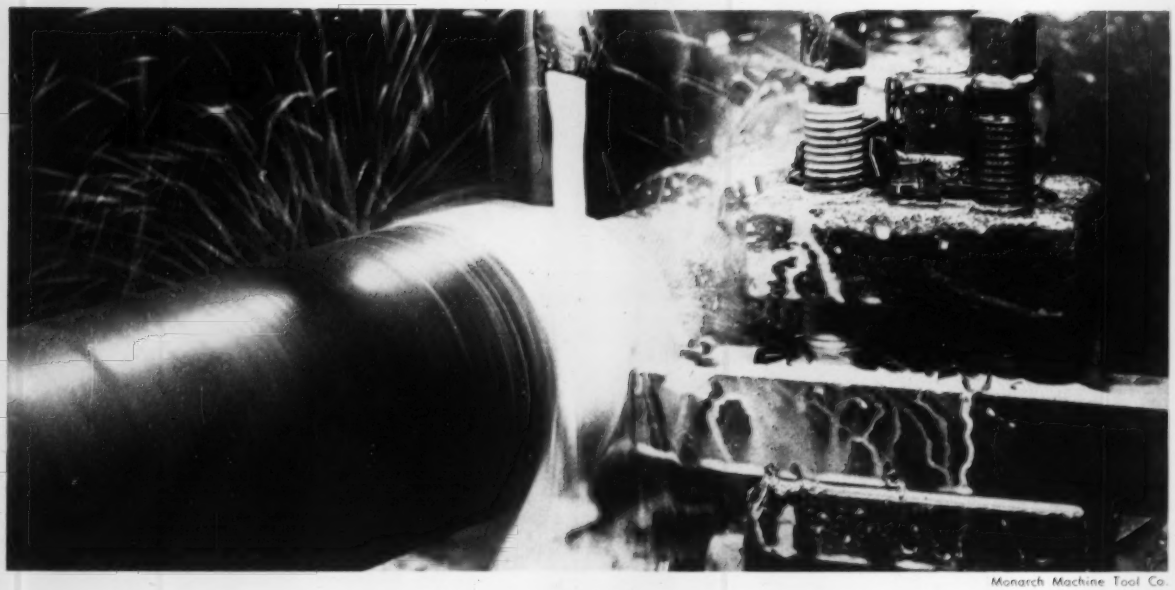
X-RAY— Van de Graaff, 2-million-volt, x-ray generators are being installed at Foster Wheeler's new plant at Mountain Top, Pa., and Watertown Arsenal. Small source of x-rays does precision radiography even through thick steel walls. It's a product of High Voltage Engineering Corp., Cambridge, Mass.

TOUGH CUSTOMER—Stainless steel is a natural in nuclear labs because of its hard, dense surface which is not readily affected by radioactivity. The trick: Merely clean surfaces with nitric acid — a particularly good solvent for uranium. Corrosive action of the acid does not harm the steel.

ABRASIVES—Metal abrasive users who have been looking for tough shot of uniform size and hardness may find what they want in cut wire shot. Made by shearing a strand of wire, length of each cylinder is equal to the diameter of the wire. It's a product of Harrison Abrasive Division, Metals Disintegrating Co. Inc., Elizabeth, N. J.

BOON TO TRUCKERS—Headaches of long-distance truckers over maze of state wheel-base laws get a satisfying dose of aspirin with the announcement by Trailmobile Inc., Cincinnati, of a new shiftable tandem axle suspension. Total distance of movement is 45 inches, and weight distribution can be adjusted accurately in three-inch increments. Mechanism is so easily manipulated that the driver makes changes in a few minutes.

Metalworking Outlook—p. 21 *Market Outlook—p. 102*



Monarch Machine Tool Co.

Metallurgists Offer Cutting Tools a Bigger Bite

Alloying elements improve the machinability of basic steels but leave other physicals unchanged. Dividends are paid in the machine shop as the cutter finds an easier victim

By ROBERT F. HUBER
Machine Tool Editor

STEELMAKERS are wooing their cost-conscious machining customers as never before.

Feeling among steel men is that they can play a large part in higher-output, lower-cost machining production by contributing steels that surrender more readily to the cutting tool attack. Cutter design, cutting fluids, the machine itself and other variables can be improved to boost production, but workpiece material is getting top billing as a machining variable.

Focal Point—Metallurgical contribution to better cutting centers around friction reduction. This friction, one of the greatest inhibitors to efficient metal removal, can be reduced by better application of better cutting fluids or by inclusion of some lubricating agent in the workpiece material itself. Metallurgy is taking a healthy swat at the latter.

Agents used to improve machining are sulphur and lead. Both of these tend to lubricate the cutting action and flow of the chip across the cutter and both permit freer, faster cutting.

Heavyweight—Addition of lead to steel for easier machining is not new. It started back in the 30's, but during World War II virtually all the available supply of leaded steels was being shipped to Canada or to England for military use.

After the war, development work on leaded steels continued, and by the start of the Korean emergency, the U. S. Government began to use them on ordnance. While leaded steels are not new, their availability on a large scale for peacetime production has occurred recently.

Recipe—At Inland Steel Co., parent producer of the leaded steels, lead pellets are shot into the open hearth steel as it is poured into ingot molds. Lead content is held at from 0.15 to 0.35 per cent. Addition of lead in this range to any basic steel analysis, carbon or alloy, increases machinability a minimum of 25 per cent over that of the basic analysis without the lead addition.

Both Inland and Copperweld Steel Co., under Inland license, produce these steels in a variety of hot-rolled bar sizes.

What Happens—Addition of lead to a given grade of steel improves

CARBON AND ALLOY LEADED STEELS

Grade	% C	% Mn	% P	% S	% Si	% Ni	% Cr	% Mo	% Pb
Ledloy—Grade A	0.15 max.	0.75-1.25	0.04-0.09	0.20-0.34	0.10 max.	.....	.....	.....	0.15-0.35
Ledloy—Grade B	0.15 max.	0.85-1.35	0.04-0.09	0.35 min.	0.10 max.	.....	.....	.....	0.15-0.35
Ledloy Special 1045	0.43-0.50	0.60-0.90	0.04 max.	0.05 max.	0.15-0.30	.....	.....	.....	0.15-0.35
Ledloy Special 4140	0.38-0.43	0.75-1.00	0.04 max.	0.04 max.	0.20-0.35	.....	0.80-1.10	0.15-0.25	0.15-0.35
Ledloy Special 8620	0.18-0.23	0.70-0.90	0.04 max.	0.04 max.	0.20-0.35	0.40-0.70	0.40-0.60	0.15-0.25	0.15-0.35

HERE'S HOW LEADED STEELS PERFORM ON THE JOB

Fig. 1

Fig. 2

Fig. 3

Fig. 4

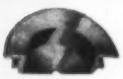


Fig. 5

	Ledloy	Former Material	Production Change	Production Increase
1. Hose Ends Male	Grade A	B 1113	Form Tool—sfm — Increased 75% Form Tool—Feed — Unchanged Drill —sfm — Increased 81% Drill —Feed — Unchanged Time/Part—Seconds — Decreased 39%	64%
2. Hose Ends Female	Grade A	B 1113	Form Tool—sfm — Increased 70% Form Tool—Feed — Unchanged Drill —sfm — Increased 65% Drill —Feed — Unchanged Time/Part—Seconds — Decreased 35%	53%
3. Gear Hob	Grade B	B 1113	7.8 sec. reduced to 4 sec.	48.5%
4. Insert	Grade A	B 1112	Form Tool—sfm — Increased 150% Form Tool—Feed — Unchanged Drill —sfm — Increased 157% Drill —Feed — Unchanged Tapping —sfm — Increased 150% Time/Part—Seconds — Decreased 39%	63%
5. Textile Machine Part	Grade A	C 1117	Form Tool—sfm — Increased 88% Form Tool—Feed — Increased 4% Drill —sfm — Increased 81% Drill —Feed — Increased 7% Time/Part—Seconds — Decreased 46%	83%

the latter's machinability by reducing friction, improving surface finish and giving better chip formation.

Studies show the lead aids in lubricating the tool, both where the cutting edge contacts the work and where the chip bears against the tool face. This reduces generation of heat and minimizes power and time needed to cut and deform the chip. A tool tends to wear rather than burn and reduced friction allows higher machining speeds with a larger number of parts per hour.

Better Finish—In normal cutting, high temperatures and pressures at the tool edge often cause metal to weld to the tool. As this weld sloughs off between the tool and workpiece it destroys the finish. When leaded steels are handled properly, this buildup is avoided because of reduced friction and heat.

Also, addition of lead to a steel that normally yields long, tough chips on a heavy cut will cause the chips to break up into more desirable, shorter lengths that quickly fall clear of the tool.

Adaptable—Big asset for leaded steels, excepting machinability, is that properties are virtually unchanged. Steels can be case carburized or heated and quenched with the same facility as their unleaded counterparts.

Leaded steels show up well in those machined parts that must be forged or upset. One large manufacturer is using Ledloy for screws that have an upset head.

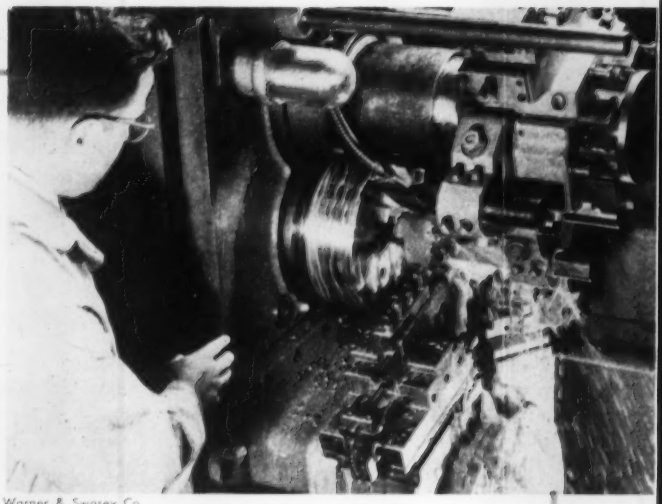
Availability—Lion's share of the leaded steels being used are cold drawn bars. Cold drawing improves the physical properties of the steel and gives better tolerances and finish to the bars—especially desirable in screw machine work. Bars are also available hardened and ground, turned or polished.

Of the five Ledloy grades available at Inland, two are in the carbon and three in the alloy steel range. Copperweld also has added lead to several other steels. Prediction is that most future development will take place in the carbon range—by popular request. Still, biggest payoff may be in improved machinability of tough, poor-cutting grades such as 4140.

Step Up—In the annealed state,

BASIC OPEN HEARTH REPHOSPHORIZED AND RESULPHURIZED STEELS . . .

FEDERAL or AISI No.	C	Mn	P Max.	S Max.
C 1211	0.13 max.	0.60-0.90	0.07-0.12	0.08-0.15
C 1212	0.13 max.	0.70-1.00	0.07-0.12	0.16-0.23
C 1213	0.13 max.	0.70-1.00	0.07-0.12	0.24-0.33



Warner & Swasey Co.

Here's How Resulphurized Open Hearth Steel Performs in the Shop . . .

Case: NUT produced on single-spindle, Werle nut automatic from 1-1/16 hexagon.	REPORT—Material gave 25 per cent better tool life on forming, drill and cutoff.
Case: SLUG—countersink, chamfer and cutoff (1⅛" round) at 200 sfm.	REPORT—Speed, 250 sfm. Production, 1152 parts per hour compared to 1028 with B-1113
Case: GEAR BLANK produced from 1-7/32" rod at 225 sfm with B-1113.	REPORT—Speed increased to 290 sfm and finish was improved.
Case: ECCENTRIC STUD—turn, form, thread and cutoff on No. 2 Brown & Sharpe, single spindle automatic. B-1113 ½" hexagon.	REPORT—Speed jumped from 228 to 500 sfm at 0.0026" feed. Production increased from 65 to 120 parts per hour.
Case: TURNBUCKLE SCREW—turn, form, thread, cutoff chamfer and relief cut on 1" Acme Gridley, six-spindle automatic at 0.003" feed. With B-1113, made 400 parts per hour	REPORT—Use of the new material made it possible to increase speeds up to 360 sfm. Production was upped from 400 to 800 parts per hour.
Case: STEERING WHEEL HUB produced from 1⅜" round. Spindle speed was 170 sfm at 0.006" feed.	REPORT—Speed was increased to 188 sfm, to give a 17 per cent production hike. "Finish good."

Source: Based on Jones & Laughlin Steel Corp.'s New 1200 series Cold Finished Steel.

lead bearing AISI 4140 can be machined at the same speeds and feeds as recommended for C-1117—it has a machinability rating within about 15 per cent of that of B-1112 screw stock. In the heat treated condition, lead bearing AISI 4140 also machines 50 per cent faster than standard, heat treated AISI 4140.

This AISI 4140 grade and the low-carburizing AISI 8620 (lead bearing) are available from stock at Joseph T. Ryerson & Son Inc.

In the Pudding—Success of leaded steels in alleviating machining problems is shown in case histories of its application. (See attached chart.) One supplier says he expects a minimum of 25 per cent decrease in machining time when leaded steels are put to work. Range used most often is from 20 to 75 per cent, but even the high side is pushed by some jobs.

Point to consider here is the proportion of machine cycle time, which is time under cut versus handling or positioning time. Naturally, improvement due to free-cutting steels will be greatest when the cutting time is largest.

Gains in tool life are usually estimated even higher than the production gains. Double tool life often occurs and tool life has been extended three to four times on several jobs.

Sample—At Seibert & Son Co., Chenoa, Ill., a turning job on a small spindle was done with carbide tools at 460 rpm, 0.006-inch per revolution feed on AISI 4140 or 8642 steel. With leaded 4140, high-speed tools cut at 740 rpm and

at a stepped up feed of 0.009 ipr.

Drilling the same part (¾-inch drill) was done at 460 rpm and 0.004 feed. It now runs at 554 rpm and 0.006 feed. In addition, the 3½-inch deep hole is drilled in one plunge, while it had been the practice to remove the drill frequently for chip removal. Knurling a nut in the same shop once took 90 seconds and is now done in 60 seconds.

More to Come—Inland states that more leaded steels will be developed as production facilities increase and as demand for other grades in economic quantities arise.

Parallel Course — Simultaneous with the promotion of leaded steels has been the development of open-hearth resulphurized and rephosphorized steels. Both are aimed at the machinability problem.

Steels of the same analysis as the new open hearth steels have long been produced in bessemer converters; and this bessemer screw stock has been the standard for free machining steels.

One to Watch—Production of open hearth equivalent of high-machinability, bessemer screw stock represents a significant change in long established steelmaking practice. Mills are turning out steels analogous to the bessemer screw grades—B-1111, B-1112 and B-1113—in the basic open hearth and, to some extent, in electric furnaces.

Years of experimentation to develop efficient and economical methods of making steels of high machinability, good soundness and fine surface were brought to a head with this change in production method.

Uniform—Steel made in open hearth furnaces can be closely controlled. It is uniform in quality from heat to heat and within each heat. Uniformity is an important advantage in automatic screw machine operation. Open hearth process gives somewhat more flexibility with respect to nitrogen and phosphorus contents.

The open hearth version is covered by standard specifications—designated by AISI as C-1211, C-1212 and C-1213 (See table). Some producers have developed modifications of these basic compositions.

A wide range of free-cutting steel bars are cold drawn to improve physical properties.

Cold working increases strength of the steel and retains 70 to 75 per cent ductility. Result: A combination of qualities desirable for free-machining steels.

Study—At Jones & Laughlin Steel Co., first batches of experimental 1200 series, free-machining steel were made in May, 1951. These heats were then rolled to bar sizes, cold drawn and tested in automatic screw machines.

A few months later first production trial heats were made. Bars were shipped to many customers for trial in screw machine production. A Spark plug manufacturer made studs from the steel. A washing machine company machined wheel hubs. A Detroit motor parts producer made gear blanks. Of the 64 firms reporting on the first production batches, the vast majority gave a big OK.

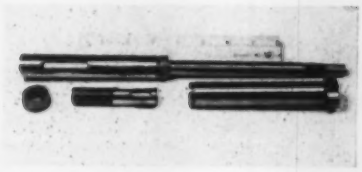
J & L made and shipped more trial lots, then graduated to full-scale production. A veteran metallurgist at J & L's Pittsburgh Works Division sums it up this way: "Our experience indicates that in ultimate use the new grades are superior to the bessemer grades they have displaced."

Problems — From standpoint of metallurgical practice, it is entirely feasible to reproduce the bessemer range of analyses in the open hearth. Nitrogen content may be duplicated consistently or varied over a fairly wide range with suitable addition agents.

However, from the operating viewpoint, change to open hearth practice brought on several new problems: In bessemer practice it was possible (and sometimes desirable) to add sulphur and occasionally some phosphorus with the converter charge, since the acid slag has no effect on either of these elements. In basic open hearth practice, these additions must be confined to the ladle.

Phosphorus and nitrogen contents inherent in acid, bottom-blown converter operation must be obtained from ladle addition in open hearth practice. Sometimes the sizable additions required for large open hearth heats give physical difficulties.

Here's How—J & L is producing the C-1200 series in 225-ton, open-hearth furnaces. Straight ferromanganese is added at the furnace stage to meet specifications. Preferred bath temperatures before manganese addition is 2910 to 2940° F. Heat is tapped about five minutes after the addition is made.



Leaded 4140 steel on these parts gave Seibert & Son Co. a production boost

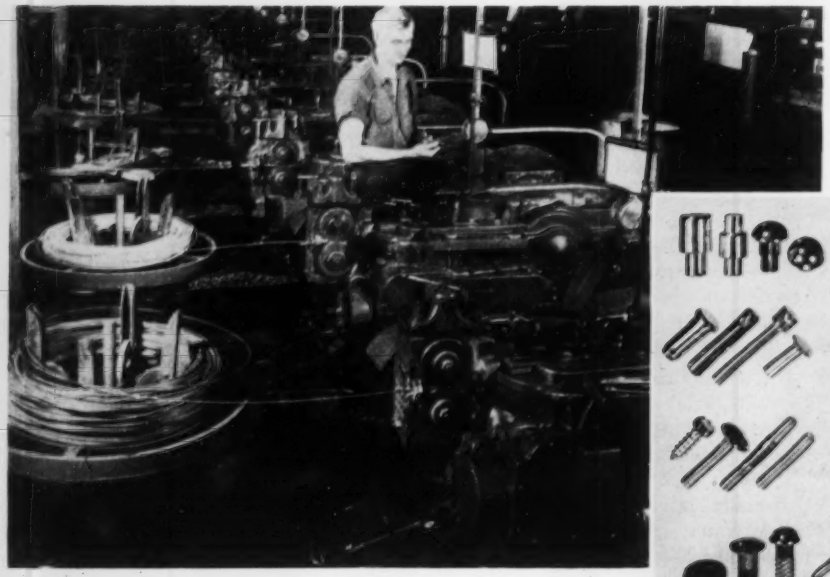
Flowers of sulphur and ferrophosphorus are added in the ladle to meet specifications. If desired, nitrogen also may be added in controlled amounts in any of several available forms. Final adjustment of analysis is made by controlled addition of a small amount of ferromanganese.

Casting—Steel is cast in 25 x 27-inch, corrugated-bottle-top ingots. Capping, if necessary, is with use of a small quantity of crushed, 90 per cent ferrosilicon.

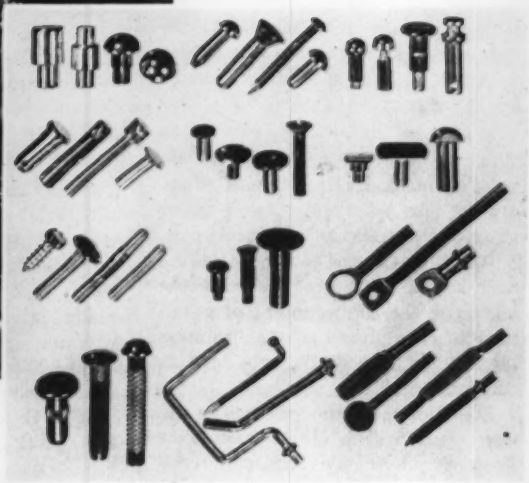
This mill practice, according to J & L, gives steel with excellent uniformity within the heat and a high order of consistency from heat to heat. The added flexibility with respect to nitrogen and phosphorus contents permits the manufacture of analyses that are better suited for particular applications than conventional grades.

Special Qualities—United States Steel Corp. is producing its MX-quality, free-machining, screw stock in open hearth as well as bessemer grades. Free cutting steel of the C-12XX type is especially controlled to improve cold drawing characteristics. It is a fast-cutting bar stock with good surface quality and performs especially well when finished machined parts must be crimped or otherwise deformed.

Most major producers are turning out screw stock in the open hearth as well as the bessemer. Some have dropped bessemers entirely. Chances are good that the open hearth will do even more of the job on free-cutting steels in the future.



By H. C. WEIDNER JR.
Townsend Co.
New Brighton, Pa.



Get the Most Out of Cold Heading

Operation is generally thought of as being synonymous with fasteners, but equipment, tool and material improvements offer new engineering possibilities

MANY engineering frontiers remain to be opened up by cold heading and allied operations.

Although the industry consumes about 2 per cent of the annual steel output, it is customary to think of it under the narrow heading of fasteners — rivets, bolts, nuts, screws and the like.

True, the bulk of cold headed parts falls into these categories, but improvements in equipment, tooling (particularly tungsten-carbide header tools) and steels have erased former boundaries.

Advantages — Design potentialities are inherent in the advantages of cold heading, which include:

There is virtually no scrap; tensile strength is increased by cold working; flow lines of material follow contour of upset section (and corner fillets are required) to up fatigue and shock resistance; quality is high because only materials that can be readily cold headed are those that are free from inclusions, seams and surface defects; they also must be ductile and highly resistant to cracking.

Also, surface finish is excellent; compared with screw machine parts, header parts with offsets, wings, flats or ovals can be more easily made; unit costs are relatively low, because of high production rates. This may be true even when one or more secondary operations, such as threading, machining, trimming, drilling, flattening or bending, are required.

Process—Cold heading is also known as cold forging or cold upsetting. Basically, there are two types of machines—the open die and solid die. Both types are made in single and double stroke models. Small, single-stroke headers will make up to 400 parts a minute; small, double-stroke headers up to 250; and on large headers, speeds drop to as low as 50 blanks per minute.

Pressures are developed with each blow of the heading punch, ranging from 3 tons on small headers to 100 tons on large headers accommodating wire diameters up to 1 inch.

Rules—Volume of material that can be upset depends upon type of material, shape of upset and original shank diameter. Of course, the farther the blank extends beyond the face of the die, the greater is the chance that material will bend and cause laps or folds.

Two rules of thumb: Maximum upset diameter should not exceed twice the shank diameter for each blow; and, maximum amount of material that can be formed into an upset section in a single blow is a length of wire that does not exceed $2\frac{1}{4}$ times its diameter or

4½ times the diameter if double blows are used.

Greater upsets are possible with special methods and machines.

Shanks — Extrusions or die-pointed shanks can be made only in solid dies. Here, as a rule, practical length is nine times the diameter of the shank.

On open (or split) die, automatic headers, length limits go up to 10 inches; magazine-fed, rod headers will handle lengths up to 60 inches; and any length that can be previously straightened and cut off can be processed on hand-fed headers.

Stresses — Cold heading causes internal stresses that may require relief by annealing. This is particularly so where upset section is fairly large in diameter and thin. Sometimes a low-temperature strain relief (that does not drastically reduce tensile strength) is used.

Tolerances—Tolerances must be more liberal than on parts produced on screw machines. Exceedingly close tolerances are not economically feasible for two reasons: High cost of frequent die replacement and reduced man-hour output because of close machine attention required.

Tolerance ranges: Tolerance requirements will vary directly with the diameter of the wire, and thus with the size of the machine. Diameter tolerances as small as 0.001 can sometimes be held; and tolerances as great as 0.060 are sometimes required.

Other Considerations — When compared to screw machines, extreme concentricity requirements are difficult to hold on cold headers. This is because upset is made with a moving punch. Its alignment is dependent upon the condition of the machine and skill of the operator.

Sharp corners are difficult to fill and should be avoided. Substantial radii are a great advantage. Thin sections are hard on tools and also should be avoided.

Square shoulders (where flat and shank diameters are the same) are not desirable. If shoulder is slightly larger than shank, tooling and manufacturing problems are reduced.

Thread Rolling — This operation and cold heading are closely allied.

Here blanks are rolled and squeezed between two steel dies that are machined in a pattern similar to the finished thread. Thread is formed by the displacement of metal. This amounts to a cold forging process.

There are many cases where a drawing will indicate a cut thread when a rolled one would be satisfactory, if not cheaper. Added advantage is that rolled threads are generally superior to threads that have been cut.

Figures—Straight tension tests show rolled threads are 10 to 25 per cent stronger than cut or ground threads of similar size and material. Difference may go up to 50 per cent if fatigue strengths are compared.

In rolling, fibers are elongated and re-arranged in unbroken flow lines that follow thread contours. Because of precision dies, it is possible to roll threads that are considerably more accurate and uniform than threads that are cut.

Rolling the blank between dies results in a surface that is hardened, burnished, non-porous and free from tears. Another advantage is that rolling can be done on a wide variety of materials.

COLD HEADING HELPS HERE

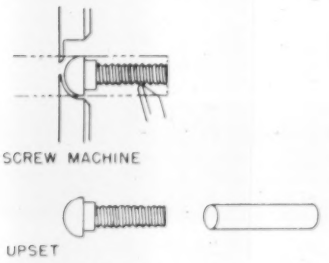
Major appliance manufacturer reduced cost of studs for timers on automatic washing machines from $52.50 to $10.50 per 1000.

Whirlpool Corp. saved $11,190 a year by cold heading three special parts for home laundry equipment. Two support and align the entire mechanism in a washer; other is a pressure spring adjustment on the shoe of an ironer. Savings were $7 to $20 per 1000.

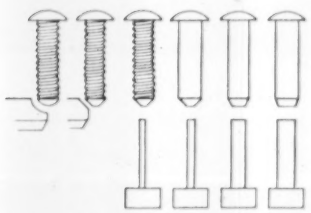
Caterpillar Tractor Co. is getting two fasteners (clutch-facing, release pins) for what it once paid for one.

Admiral saved $15,630 a year on cold-formed bolts to fasten big appliance to its shipping crate.

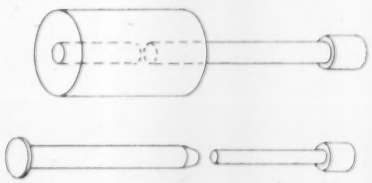
Linde Air Products reduced cost of a bronze, cylinder-connection nipple on oxy-acetylene equipment by 45 per cent.



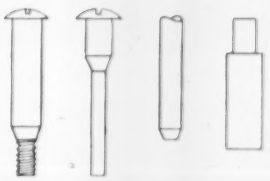
Screw machine: If part takes 2⅜ inches of ¾ bar stock (weight, 0.410 pound), cold heading does job with 3-5/16 inches of 0.445 wire (weight, 0.297 pounds)



So if point is 1/16 inch long and has ⅛ inch end diameter, knockout pin must have ⅛ inch diameter. As side angles are decreased, pin diameters go up



Principle of solid die manufacture: Knockout pin has diameter of blank (top); but if part is pointed, pin is diameter of pointed end, not the shank diameter



Some possible designs through wire reduced by extrusion. Angle close to 15 degrees on a side is necessary for best results; headless part is exception to the rule

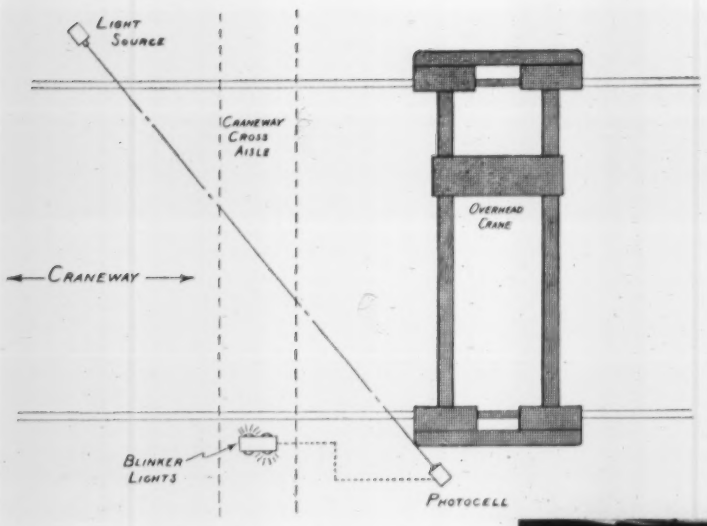
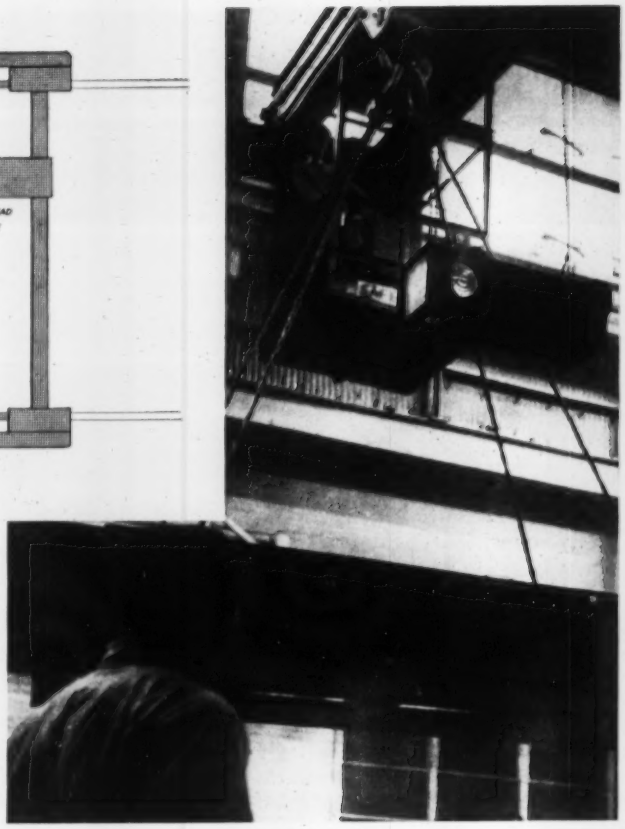


Diagram of the cross-aisle warning setup at Standard Pressed Steel shows simplicity of arrangement by which unwary pedestrians get better break



These blinking red traffic lights are flashed on and off by photoelectric eye when crane comes within 20 feet of aisle

Extra Eye FOR LOW BRIDGES

Red traffic lights, similar to those at railroad crossings, warn pedestrians of approaching crane. Cost of the electronic device was only $250 per aisle

THERE'S LITTLE chance that Standard Pressed Steel Co.'s 15-ton steel handling bridge crane will lower the boom on an unsuspecting employee. Red traffic lights, similar to the type used at railroad crossings, now flash a warning whenever the overhead crane approaches any one of the three heavily traveled cross-aisles.

The system, although lending considerable safety to a sometimes hazardous handling operation, is simple and presents an insignificant expense. Its concern for the unwary passerby led the Jenkintown, Pa., producer of socket-head screws to install sets of photoelectric eyes to watch over the cross-aisles. The company connected these electronic eyes to blinker-type warning lights—one suspended over each intersection at a height of 12 feet.

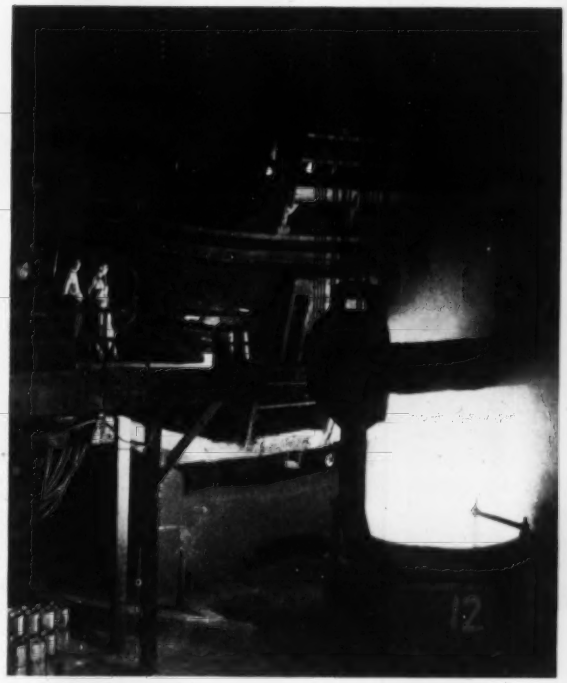
Eyes Open, Heads Low — Now when the crane comes within 20 feet of the centerline of an aisle, it interrupts a photoelectric beam. Red lights in the danger aisle immediately start blinking and continue to flash a warning until the overhead carrier is past.

Actually, cross traffic does not come to a halt when the red lights start flashing. There is no immediate danger in having a crane, loaded or not, moving overhead. But the lights do warn pedestrians to be on their toes, to keep their eyes open and their heads low.

Home-Grown Device—The new warning system, a plant-made device, cost SPS less than $250 per aisle.

This represents cost of photoelectric units, traffic light, plus necessary controls and wiring.

The protected craneway, in which the company stores steel bar and coil stock to be made into screws and locknuts, extends for 335 feet through the receiving end of the plant. The three cross-aisles are each 10 feet wide.



(COMPARISON DATA)
ELLIPTICAL & CIRCULAR FURNACES

	Elliptical	Circular
Shell:		
Dimensions, ft	29 x 20	.....
Diameter, ft	.....	20
Normal charge, lb	215,000	185,000
Electrodes:		
Diameter, inches	18	20
Pitch circle diam, ft-in.	5-7½	5-0
Transformer Ratings:		
Capacity, kva	7500(2)	20,000
Voltage Taps:		
No. 1	222*	370*
No. 2	195*	310*
No. 3	128	280*
No. 4	113	231
No. 5	...	179
No. 6	...	144
Power factor range		
(100% rheostat)	78-83	77-84

*Preset power input

Conditions Favor Six-Electrode Furnace

Trend at new or revamped electric furnace shops points toward elliptical units having 6-point distribution of Btu into the metal bath

TOP CHARGED electric arc furnaces—elliptical in shape, equipped with six electrodes and automatic electrode clamps, and served by high-powered transformers — are faster and more efficient than any circular furnaces with the same rated capacity. This conclusion was reached after a thorough study of shop conditions by J. K. Preston, supervisory trainee, Timken Roller Bearing Co., Canton, O., whose paper on the subject was one of the highlights of the eleventh annual Electric Furnace Steel Conference, AIME, Hotel Netherland Plaza, Cincinnati.

In the development of larger, faster melting arc furnaces one of the most famous prototype furnaces has been ignored, namely, Timken's No. 7, 100-ton furnace. This furnace was described by Mr. Preston as having an elliptical hearth, 29 feet on the major axis and 20 feet on the minor axis. It is equipped with two sets of three 18-inch graphite electrodes, the normal charge being about 215,000 pounds.

Fifty heats of type 4720, selected at random, were melted in each furnace. Scrap charges for these heats consisted of 20 per cent alloy bloom crops, 50 to 55 per cent alloy light and medium scrap and 25 to 30 per cent alloy turnings.

Melting Rate Higher—The calculated mean melting rate for the elliptical furnace was 24.8 tons per hour and for the circular furnace it was 22.2 tons per hour, both rates having been computed on a basis of 50 heats.

Obviously, the temperature of an arc cannot be increased by increasing the power input to the electrodes. Therefore, more efficient distribution of energy in the charge by proper placement of enough radiation sources is the more feasible way to promote faster melting.

In the elliptical furnace the distance between centers of any two electrodes in either set is 4 feet 10 inches, while in the circular furnace the comparable dimension is 4 feet 5 inches, or a difference of 8½ per cent. However, because of the difference in size of electrodes used in the two furnaces, the least distance between any two electrodes in the elliptical furnace is 40 inches while in the circular furnace this least distance is 33 inches, or a difference of 17½ per cent.

In addition, the greater exposed surface area of the scrap in the elliptical furnace undoubtedly aids in obtaining faster melting rates.

Low Power Input—The elliptical furnace is a faster melting fur-

nace with a lower power requirement. This type furnace with its partial silica lining has a 13½ per cent lower refractory cost on a per-ton basis than the completely basic lined circular furnace. Electrode consumption on the circular furnace is 11½ per cent less on a per ton basis than on the elliptical furnace. However, this may be due in a great part to the longer time that the electrodes are raised for charging the elliptical furnace. Under present conditions total energy consumption of the two furnaces is essentially the same, with less than a plus or minus variation of 1 per cent from month to month.

F. W. Brooke, Pittsburgh, in commenting on this paper, emphasized the importance of head room in the installation of electric furnaces. He set this at 33½ feet minimum from the tap charge floor to the highest mast position of the electrodes, figuring 7-foot electrode sections. In his opinion the future electric furnace will be of the 6-electrode elliptical type.

Conserves Alloys — Reladling stainless steel heats for the purpose of conserving alloys as explained by A. J. Texter, superintendent of melting, Firth Sterling Inc., Pittsburgh, includes the use of a dummy ladle large enough to hold the entire heat of slag and metal.

Here the furnace is tilted slowly to get the greater portion of the slag into the ladle before the metal starts. This sequence is important because of the large amount of slag-metal contact. The rich silicon metal contacting the rich slag oxides causes faster and almost complete reduction of the slag oxides. The reladling action is a more effective means of getting high-silicon metal in contact with oxide rich slag than can be accomplished by mechanical stirring of slag and metal in the furnace.

The major portion of the slag can be decanted from the ladle into a nearby slag pot or lip poured back into the furnace. The latter causes more slag and metal mixing and again increases the chromium recoveries, and if the bath silicon is high, it is still further oxidized.

As soon as the steel is returned to the furnace, the final control preliminary test is taken and immediately the bath is cleaned of all remaining slag and a new lime silica slag is added. The discard slag usually will be under 2.50 per cent Cr_2O_3 and as low as 0.25 per cent.

Average Chromium Loss—The average slag weight at slag off or reladle on these 42 heats was 412 pounds per ton. Average Cr_2O_3 content of the slag was 1.87 per cent and the average bath silicon after the reladling process was 0.37 per cent.

This is equal to average chromium loss to slag of 5.3 pounds per ingot ton which is the important figure for evaluating the practice, rather than high or low lime-silicon ratios or the percentage of Cr_2O_3 in the slag.

The reladling process also gives a more thorough mixed metal bath from which representative samples can be obtained. These samples enable the melters to lower the chromium aim by ½ per cent and still meet heat specifications. Improving chromium recovery from slag and the lower working aims on chromium, nickel and manganese, the reladling process saves from $10 to $12 per ingot ton over previous practice.

Alloy Sheath for Power Cable

A lead alloy, containing tellurium for use as power cable sheaths was reported at the Winter General Meeting of American Institute of Electrical Engineers.

Tests have shown that it possesses a combination of stabilized bending and creep properties that are superior to those of any other cable sheath alloy now in use. Factory extrusion studies have shown that the new alloy is easily controlled during extrusion operations with standard lead press equipment, and with a wide latitude of heat treatment. Heat application at joint end wipes, and other such locations, does not affect its desirable properties.

Since completion of the development of tellurium alloy sheaths, several large commercial orders of cable with this type of sheath have been produced.

Largest Axial-Flow Pumps

Each one weighs 20 tons. Two of them will supply power for biggest tube reducing machine

A PAIR of oil hydraulic pumps, each capable of transmitting enough power to pull a diesel passenger streamliner or fly a four engine cargo transport were recently completed for Tube Reducing Corp., Wallington, N. J.

Designed and constructed by Waterbury Tool, Division of Vickers Inc., Waterbury, Conn., the pumps are high pressure, oil hydraulic pumps of the axial piston, variable displacement, reversible angle plate type. Each pump weighs over 20 tons.

Drive a Goliath — The pumps were designed for the drive system of the world's biggest tube reducer, (STEEL, Feb. 9, p. 90) which is now nearing completion. The giant machine will produce cold finished tubing compression formed to size, shape and finish. It will process ingoing tubes ranging in outer diameters from 18 to 10 inches for reductions from 17 to 9 inches in outer diameters.

The Waterbury pumps will operate the saddle—or roll housing—of the giant tube reducer through a pair of double acting hydraulic cylinders. Cylinder operation is coordinated by equalizing lines that assure proper oil flow between the cylinders for variation of pressure. Each pump can deliver up to 2300 gpm of oil at pressures up to 3000 psi.

HYDRAULIC HERCULES
. . . pump will drive huge tube reducer

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Cincinnati	Indianapolis	New Orleans	St. Louis	office only)

Bale It the G-H Way...

Make Sheet Metal Salvaging a Profitable Operation in Your Plant

Wherever sheet metal scrap accumulates in volume, it presents two problems: *First* — neat, orderly disposal with minimum disturbance to plant operation. *Second* — profitable salvaging.

A well integrated scrap salvaging operation, built around the right size and type of baling equipment, can solve *both problems* for you just as it has for many others.

The Galland-Henning Hydraulic Baling Press is fast, powerful and rugged . . . designed and constructed to convert stampings, clippings and other loose scrap into dense, compact bales at lowest possible cost per ton . . . bales that always command premium prices on the scrap metal market.

If you need help in planning Profitable Salvaging of your sheet metal scrap, you can rely on Galland-Henning for competent counsel based on years of successful experience in the design, construction and installation of scrap metal balers.

GALLAND-HENNING MFG. CO.

2747 SOUTH 31ST STREET • MILWAUKEE 46, WISCONSIN

GALLAND-HENNING

SCRAP METAL BALING PRESSES

A-7556-1F

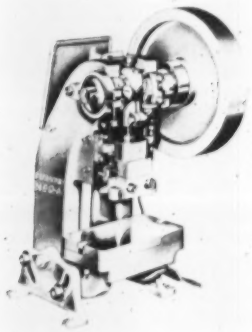
NEW PRODUCTS and equipment

Reply card on page 85 will bring you more information on any new products and equipment in this issue

Redesigned Punch Press

. . . meets strict safety codes

Redesigned to specifications of SR-4 strain gage analysis, using Meehanite castings, this 9-ton bench punch press meets strict safety codes. With toggle design nonrepeat trip mechanism, the



press has shut die height of 7 inches, intermittent capacity of 11 tons, ram area of 4¼ x 5 inches. Bed area is 6½ x 12 inches.

Other features include interchangeability of parts, large projected crankshaft bearing areas to minimize friction loss and precision ground V gibs. Diamond Machine Tool Co., Dept. ST, 5111 Coffman-Pico Rd., Pico, Calif.

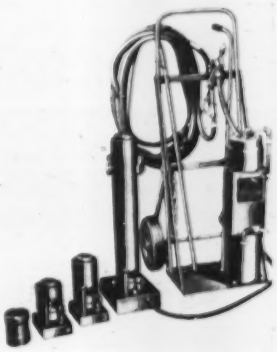
FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Air Hydraulic Jack

. . . choice of four rams

Jack incorporates use of 80 to 100 pounds of compressed air to operate a special hydraulic pump. Combination jack and ram consists of a choice of four hydraulic rams that can move 30 tons in any direction a distance of 2, 3½, 6 and 20 inches.

Air motor is mounted on a portable buggy and has 50 feet of ½-inch air hose, 6 feet of flexible hydraulic hose. Pump, buggy and accessories weigh 150 pounds.



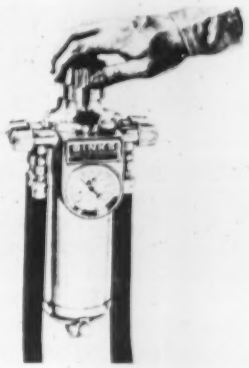
Duff-Norton Mfg. Co., Dept. ST, 2709 Preble Ave., Pittsburgh 12, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Oil and Water Extractor

. . . on spray painting air lines

Improved oil and water extractor for use on spray painting lines effectively traps all oil, water, rust



particles and other foreign material common to compressed air lines. This prevents impurities from reaching spray guns and eliminates a major cause of rejects. It also puts an end to air passage clogging in precision gun nozzles.

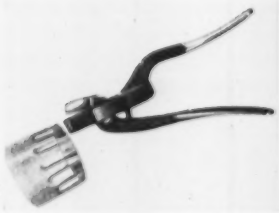
Result is major improvements for the model AO-120 that include more efficient air cleaning; easier operation and longer life, and lower maintenance cost. Binks Mfg. Co., Dept. ST, 3122 Carroll Ave., Chicago 12, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Hand Pipe Crimper

. . . crimps pipe to 20-gage

Model 111 hand pipe crimper weighs only 1 pound and is about 9 inches long, but crimps open end



of any size sheet metal pipe up to 20 gage. Operation is simple. By squeezing handles together, the 1½-inch long forming jaw is brought down into the open anvil jaw and forms the crimp as deep or long as desired. Spring return opens the handles. Whitney Metal Tool Co., Dept. ST, Rockford, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

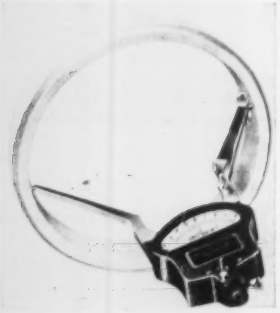
Internal Comparator

. . . gages ⅜—6-inch diameters

Interapid internal comparator has capacity for gaging diameters from ¾-inch to 6 inches. Adjustment is made by turning knob in center of gage. Initial setting is achieved with gage blocks, master gage rings or micrometers. A small locking lever is provided for

retracting arms to make it easier for the gaging tips to enter the work being checked.

Comparative reading on the meter-type scale shows at a glance



whether holes are over or undersize and by exactly how much. Scale is graduated in 0.0005-inch. Minimum depth checked: 1/16-inch. Portage Double Quick Tool Co., Dept. ST, 1049 Sweitzer Ave., Akron, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Compactor Power Float

. . . produces inseparable bond

This portable machine effects compaction-floating of harsh, dry concrete or asphalt mastic mixes.

Its action thoroughly densifies and floats harsher, drier mixes. Vertical head provides power through special alloy steel gearing for rotation of heavy float disc. Four cast steel hammers are pivoted on shafts attached to the body of the machine.

Among results: Elimination of lengthy waiting periods; economies in use of cement; inseparable bond for topping-type floors. Kelley Machine Division, Wiesner-Rapp Co. Inc., Dept. ST, 1600 Seneca St., Buffalo 10, N. Y.

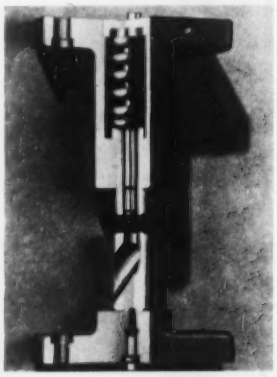
FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Mild Steel Hole Punchers

. . . re-used in unlimited setups

Each punch and die assembly is independent and self-contained in this line of type JD hole punching units. Units are designed to punch mild steel up to ¼-inch thick and can be used and re-used in unlimited setups.

Hole punchers provide for work at practically any center-to-center distance over large or small sheets the only limiting factor being size of die set or press. Punch and



die assemblies are mounted in die sets and operate in a press the same as conventional dies, permitting unobstructed feeding. Wales-Strippit Corp., Dept. ST, 345 Payne Ave., N. Tonawanda, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Lead Lining Fastener

. . . no drilling or matching

Method for fastening strapped lead linings makes use of a cartridge-powered tool or stud driver. It is used for anchoring steel straps securely to a lead lined steel vessel without drilling or matching bolt holes, or for fastening sheet lead to concrete without requiring time-consuming method of sinking anchor bolts.

In a typical strapped sheet lead lined steel vessel, use of the driver eliminates drilling of strap and shell, requiring about 12 minutes after marking, and setup operation which takes about 2 more minutes. Stud driving takes about 2 minutes per hole for loading the

gun and shooting the rivet. Marking time can be reduced considerably because in driving studs it is unnecessary to adhere to a specific spacing. Remington Arms Co. Inc., Dept. ST, Bridgeport, Conn.

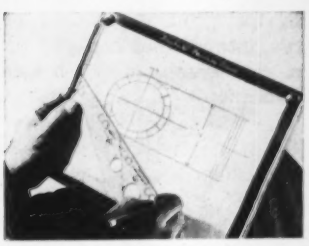
FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Portable Drawing Board

. . . weighs less than 8 ounces

This portable drawing board is made of durable, transparent plastic, weighs less than 8 ounces and can be slipped easily into a briefcase. Four corner clamps for attaching 8½ x 11-inch paper assure smooth use of working sheet without resorting to thumbtacks or tape.

Two metal straight edges—one



horizontal, one vertical—are retractable. This makes it possible to work without use of a T-square. Graphostat Co., Dept. ST, 110 Eaton Place, E. Orange, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Battery Calculator Charts

. . . direct, timesaving method

A simple and direct chart system reduces by as much as two-thirds the time to calculate battery size required for any electric industrial truck installation. Three simplified charts are used: One

for travel current; one for lift and tilt current; one for ramp current.

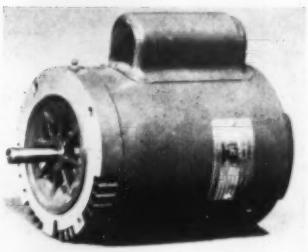
They can be applied successfully to most electrics. Copies of the complete calculator system are available free from the company. Automatic Transportation Co., Dept. ST, 149 W. 87th St., Chicago 20, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Jet-Pump Motor

. . . 30 to 60 per cent lighter

A 1½-hp jet-pump motor that weighs only 30 pounds is an addition to the manufacturer's line that begins with ¼-hp units. Company reports this model is 30 to



60 per cent lighter than its previous units.

Available in single and polyphase open models, it can be mounted horizontally or vertically. It conforms to standard NEMA mounting and shaft dimensions, and is interchangeable with ratings down to ¼-hp. Leads of color-coded braidless neoprene, automotive type grease fittings and locked bearings are among features. General Electric Co., Dept. ST, Schenectady 5, N. Y.

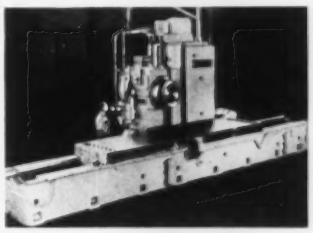
FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Heavy-Duty Miller

. . . automatic or manual work

This machine is intended for heavy work, such as milling die blocks from ruff prior to cutting impression and removing old impression before recutting on used die blocks. Called model 77 Rigidmil, it has vertical feed to head in combination with longitudinal table feed, so an automatic square cycle can be obtained for ruff milling of die shanks. Scale attached to the vertical head and an adjustable pointer on the bed are provided for setting up the automatic cycle or operating the machine manually.

Basic standard machine has a 48-inch wide table, is available



with feed strokes of 144, 168, 192 or 216 inches. Spindle head is horizontal type and has 60, 75 or 100-hp spindle drive motor. Sundstrand Machine Tool Co., Dept. ST, Rockford, Ill.

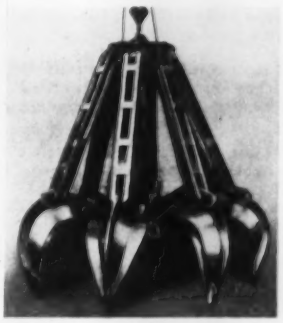
FOR MORE DATA—CIRCLE REPLY CARD NO. 12

All-Purpose Grapple

. . . doubles scrap lift load

All-purpose grapple, reported to double scrap lift load, is produced in capacities from 0.4 to 3.3 cu yd. Floating action of the slideways activates all grasping tines. Smallest size grapple has six tines; all others eight.

Tines are toughened by chrome vanadium steel. They pack scrap



tightly and hold securely even when grapple is tilted at a sharp angle. Ruhr Industries, Dept. ST, 1411 Walnut St., Philadelphia, Pa.

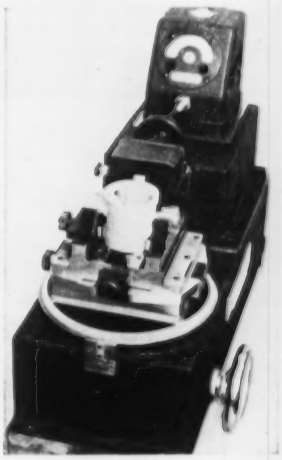
FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Contour Air Gage

. . . magnification is 415:1

Air-operated gage measures skirt contour of pistons for six-cylinder engines. Fixture and decentralizing table are mounted on an index table, graduated in 5-degree increments, which can be rotated 360 degrees. Tungsten carbide measuring contact is reed-mounted and adjustable horizontally to permit inspection of pistons of various sizes.

Magnification of the standard single dial model is 415 to 1, with



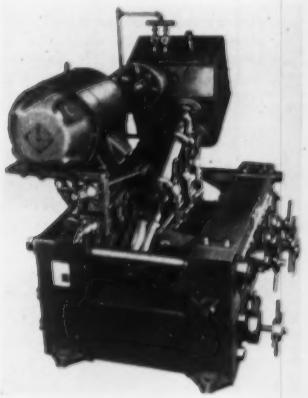
dial graduations of 0.0002-inch. Built-in master setting device ensures reading accuracy. Taft-Peirce Mfg. Co., Dept. ST, Woonsocket, R. I.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Compact Straightener

. . . handles special alloy bars

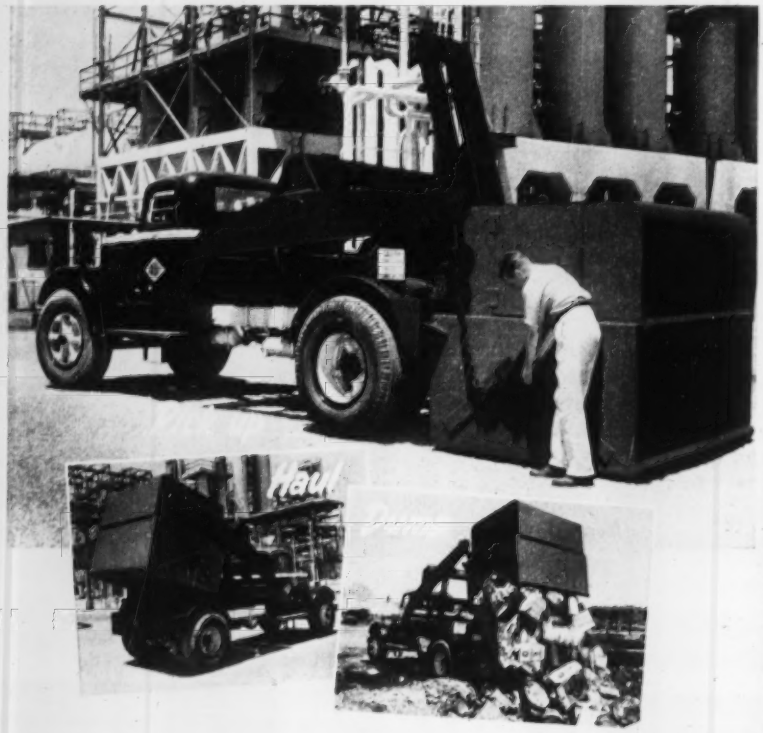
This compact, heavy-duty unit is designed for straightening hot-rolled bars and heavy-walled tubes. A water cooling system makes it



possible to handle special alloy bars at elevated temperatures. Space occupied: 10 x 8 x 8 feet, including the drive.

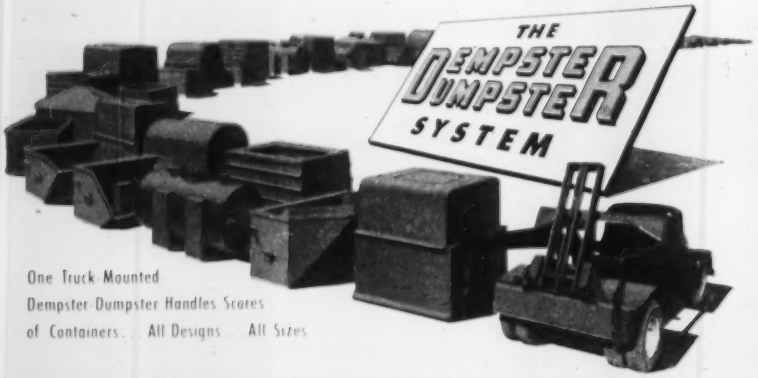
Model 1½ BC has straightening

Here's a One-Man Bulk Materials Handling System for Your Plant



IN THE Dempster-Dumpster System of bulk materials handling only one man, the driver of the truck-mounted Dempster-Dumpster, is required for operation. The Dempster-Dumpster serves scores of detachable Dempster-Dumpster Containers. Container capacities range up to 4 times that of conventional dump truck bodies and each container is designed to suit the materials to be handled—be they solids, liquids or dust . . . hot or cold . . . bulky, light or heavy. You simply place these containers at convenient materials accumulation points inside or outside buildings. When loaded each container is picked up, hauled and emptied (as shown above) or load set down intact. Entire operation is handled by hydraulic controls in cab.

Containers shown below are just a few of the many available or that can be built to meet your needs. They enable you to handle, at tremendous savings, materials of many descriptions—trash and waste materials, raw materials, finished products, etc.—with only one truck and only one man, the driver. Write to us for complete information. Manufactured exclusively by Dempster Brothers, Inc.



One Truck Mounted
Dempster-Dumpster Handles Scores
of Containers . . . All Designs . . . All Sizes

DEMPSTER BROTHERS, 614 Dempster Bldg., Knoxville 17, Tenn.

NEW PRODUCTS and equipment

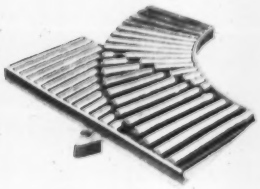
speed ranging to 400 fpm. It handles tubes from 5/16-inch to 3 inches OD and bars from 5/16-inch to 2 inches in diameter. Five-roll principle distributes straightening loads over three points. Sutton Engineering Co., Dept. ST, Bellefonte, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Switching Spur Curve

. . . two-directional control

This spur curve embodies a switching mechanism that makes two-directional control of package flow easy and positive. It can be operated manually or by remote



control. Actuating mechanism can be solenoid, air or hydraulic ram, or manual.

Switching rollers are cradled in individual brackets which are center-pivoted and move on two ball supports. Ball supports are in turn cradled in nests of smaller balls to defeat friction and achieve long life for the switch. It can be used with roller, wheel and belt conveyors. Mechanical Handling Systems Inc., Dept. ST, 4600 Nancy Ave., Detroit 12, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Dust-Tight Panelboards

. . . for hazardous locations

Line of dust-tight circuit-breaker lighting and distribution panelboards is designed for use in hazardous locations. Panelboards prevent entrance of grain dust, carbon

(Continued on p. 90)

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Just circle the corresponding number of any item in this section for more information.

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58. Extractive Metallurgy

Armour Research Foundation of Illinois Institute of Technology—Personnel and facilities available for solving industry's problems in extractive metallurgy are described in folder. It covers problems involved in recovery of metals or their compounds from ores, concentrates, slags or scrap.

59. Teflon Finishes

E. I. du Pont de Nemours & Co.—Third revision of technical bulletin on Teflon finishes is 12-page piece listing 17 new applications in addition to those reported in earlier editions. New uses are derived from antisticking property of Teflon, its high corrosion and heat resistance and its low coefficient of friction. Finishing systems, application methods, fusing operation, precautions and handling are discussed.

60. Industrial Springs

Henry Miller Spring & Mfg. Co.—36-page catalog on industrial and railroad springs features photo presentation of each step in spring manufacture and shows railroad, coke oven, mine car, tractor, press and shear applications. Company's straight-line production layout is shown as well as certain machining operations on dies and mandrels. Specs are included.

61. Hydraulic Presses

R. D. Wood Co.—Hydraulic presses for metalworking, rubber and plastics and woodworking industries are covered in 12-page well-illustrated bulletin B2471. Forging, upsetting, forming and platen presses are included with capacities up to 3000 tons. Various hydraulic control valves and accessories are also briefly described.

62. Special Machinery

Wellman Engineering Co., Anker-Holth Div.—"Wellman Will Build It!" is title of bulletin No. 145 with 21 profusely illustrated pages showing special machinery designed and built for the iron and steel industry, shipyards, dry docks, chemical industry and railroad loading and unloading terminals. Coal and ore handling equipment, bridges, cranes, buckets, hoists, charging machines and power cylinders are among items shown.

63. Chemical Porcelain

U. S. Stoneware Co.—Complete line of chemical porcelain pipe, fittings, spacers, vertical check valves, stop check valves, handwheel valves, plug valves, swivel joints, expansion joints, sight glasses, flanges, ejectors and tower packings are described and illustrated in 8-page bulletin CP-50.

64. Straightening Equipment

Sutton Engineering Co. — Varied line of roller-type straightening equipment shown in 8-page illustrated bulletin 25 includes 5 and 7-roll machines, with detail explanations of working heads and operating principles. Capsule data and illustrations are also given for such other equipment as stretchers, detwisting machines, cleaning machines, gage presses and delivery tables.

65. Purchasing Guide

Continental Copper & Steel Industries, Inc.—To facilitate purchase of products made by company's seven divisions, a detailed "Purchasing Guide" is being offered. This 12-page piece lists plant process equipment, tool steels, wire screen, insulated wire and cable, nonferrous alloys, pipe, snow removal equipment, lifeboats, boat-handling equipment and steel and pleasure craft.

66. Mechanical Handling Devices

American Forge & Mfg. Co. — Cranehand automatic mechanical handling devices described in 4-page brochure allow cranemen to grip, lift, transport and release all types of loads without help. Devices can operate in areas too small for lift truck and are available in wide variety of sizes for both fragile and bulky loads.

STEEL
Penton Building, Cleveland 13, Ohio

1-11-54

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5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
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67. Industrial Fans

Aerovent Fan Co.—64-page illustrated catalog describes complete line of industrial fans and accessory equipment. It contains engineering, installation and operating data for standard and special applications with data for calculating duct sizes, friction losses, and performance and horsepower needs.

68. Adjustable V-Belts

Manheim Mfg. & Belting Co.—8-page illustrated catalog describes Veelos TD and TE adjustable v-belts for D and E drives. Quick coupling feature of the built-up type design is stressed and explained in detail, together with full installation and servicing instructions. All specs are also provided.

69. Air Preheater

Air Preheater Corp.—Fuel consumption can be reduced up to 30 per cent by preheating combustion air for process equipment in the Ljungstrom air preheater, described and illustrated in 12-page booklet. Tables of operating data from actual installation are included, as is a chart for determining fuel savings.

70. Cutting Oil Purifiers

Sharples Corp.—"Should I Purify Cutting Oil in My Shop" is question answered in illustrated bulletin 1270 of this title on centrifugal purifiers for cutting oils. It answers 16 questions frequently asked by machine shop operators. Typical layouts of purifications systems are shown.

71. Aid To Bearing Selection

Torrington Co., Bantam Bearings Div.—Basic technical data which facilitates selection of proper bearings for any installation are found in illustrated catalog No. 61. Covered are heavy duty needle bearings. Cross section drawings show details of typical installations. Many data are in table form.

72. Thin Gage Strip Metals

American Silver Co., Industrial Div.—6-page folder describes and illustrates wide variety of thin gage, close tolerance ferrous, nonferrous and precious strip metals. List of thickness tolerances held on beryllium copper strip gages is included. Typical uses are listed.

73. Research Instruments

North American Philips Co.—In addition to x-ray diffraction, spectrometry and spectrography, 64-page reference book "Research and Control Instruments—X-Ray and Analytical Equipment" covers such components as tubes, rectifiers and cameras. Space is devoted to electron microscopes, Geiger-counter x-ray diffractometer, x-ray spectrograph and a high and low angle goniometer.

74. Iron & Steel Products

Kaiser Steel Corp.—340-page general products catalog contains 117 pages of general technical information and reference tables, in addition to complete information on company's iron and steel products. Characteristics, specs and standard practices for 16 different product categories are described and profusely illustrated.

75. Fan Engineering

Hartzell Propeller Fan Co.—Much ventilation engineering information is found in 16-page bulletin A-108 "Fan Engineering Data." Fan laws and formulas, terms and definitions, recommended velocities for exhaust hoods, air pressure conversion table and charts are included. Installation, maintenance, noise problems and other data are discussed.

76. Hot Spray Finishing

Spee-Flo Co.—Two illustrated bulletins present data on Pressurematic circulating and noncirculating heaters for use with hot spray finishing process. Some units operate from original paint container and others from a pressurized pot. They attain full heat rapidly and are operated by electric pumps or from plant air lines.

77. Furnace & Oven Controls

Minneapolis-Honeywell Regulator Co., Industrial Div. — Furnace and oven controls condensed catalog and price list 53-1 has 40 pages of specifications and prices on temperature controllers, program controllers, combustion safeguard equipment, valves and other accessories.

78. Flexible-Power Presses

General Mfg. Co.—Descriptive data relative to Flexible-Power presses, accessories and straightening attachments are offered in 4-page bulletin 401. Straightening, forming, cold riveting, assembling, push broaching and fracture testing applications are shown.

79. Electric Heaters

General Electric Co.—60-page illustrated catalog GEC-1005E covers Calrod electric heaters and heating devices including immersion, strip, cartridge, tubular, insertion, and fin heaters, melting pots, thermostats,

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4	14	24	34	44	54	64	74	84
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7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
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switches and oven heaters. Catalog also contains methods for determining power requirements and heat losses in many applications, together with other engineering and reference data.

80. Tapping Screws

Townsend Co. — 8-page illustrated booklet TL-88 on tapping screws includes descriptions of seven different types for fastening in materials from plastics and plywood to metals. Recommendations chart shows which types are best for sheet steel, stainless, structural steel, castings, forgings, plastics, plywood and such compositions as asbestos.

81. Corrugated Roofing Siding

Aluminum Co. of America—Easy and efficient methods of applying Alcoa corrugated industrial roofing and siding are described in 16-page booklet AD-285. Methods outlined include self-tapping screws, Nelson Rivweld studs and Widman fasteners. Highlighted are details on construction of insulated industrial wall.

82. Reliable Story

Reliable Spring & Wire Forms Co. —Facts about this company, its manufacturing methods, process, ranges and services it can provide for various industries are contained in 24-page illustrated brochure "The Reliable Story."

83. Circular Chart Recorders

Robertshaw-Fulton Controls Co., Fielden Instruments Div.—In 4 illustrated pages, bulletin F-452M covers multipoint circular chart recorders making possible six separate records on a single chart and a segmental drive attachment which converts unit to a 24, 48 or 96 point multirecord system. Construction features and specs are given.

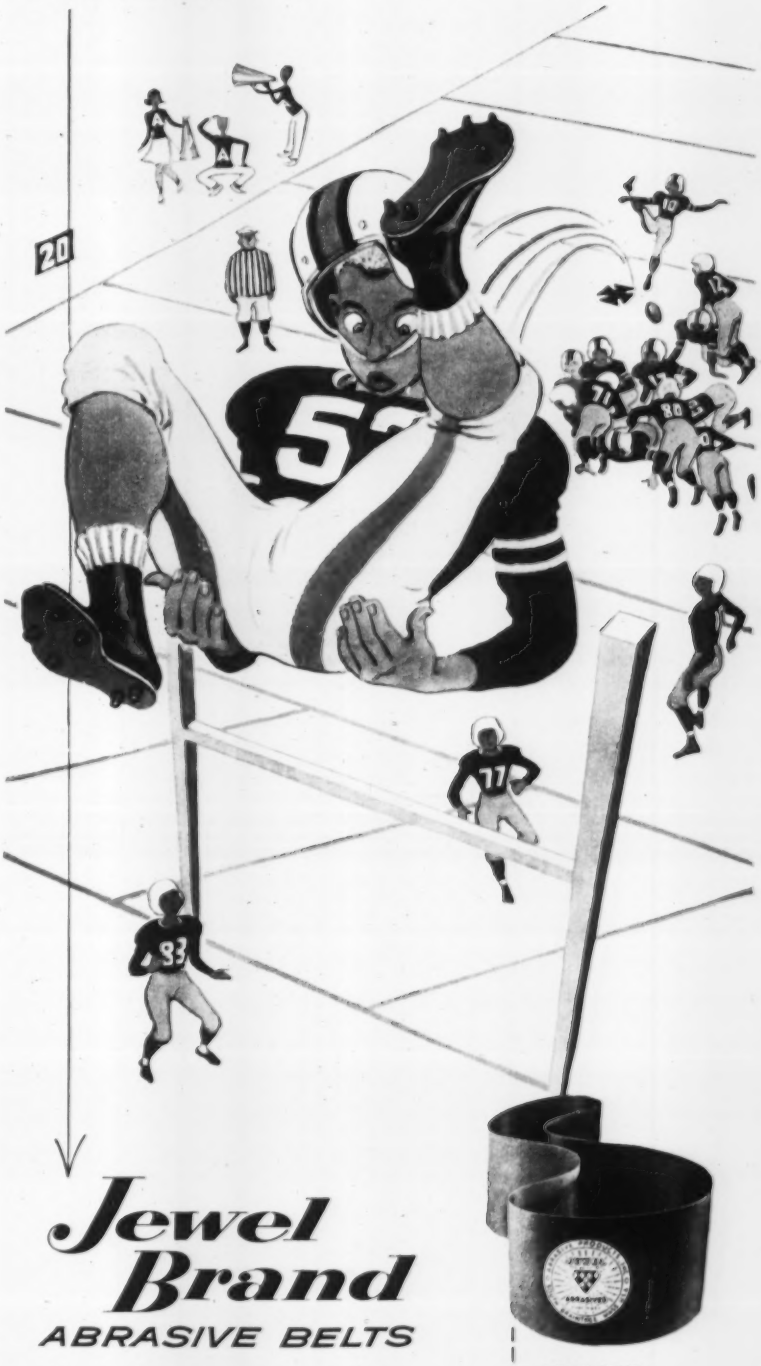
84. Rust-Preventive Coating

General Paint Corp.—A rust-inhibiting coating for new or old iron and steel surfaces, Rustmaster is covered in 40-page illustrated technical bulletin 5309. Pictures and descriptions are given of typical applications and technical data are provided on proper usage.

85. Photo-Offset Printing

Minnesota Mining & Mfg. Co. — Photo-offset printing and processing procedures for internal printing departments in business and industry are described in 16-page illustrated "Executive's Manual." It explains procedures practiced by internal printing departments in large corporations

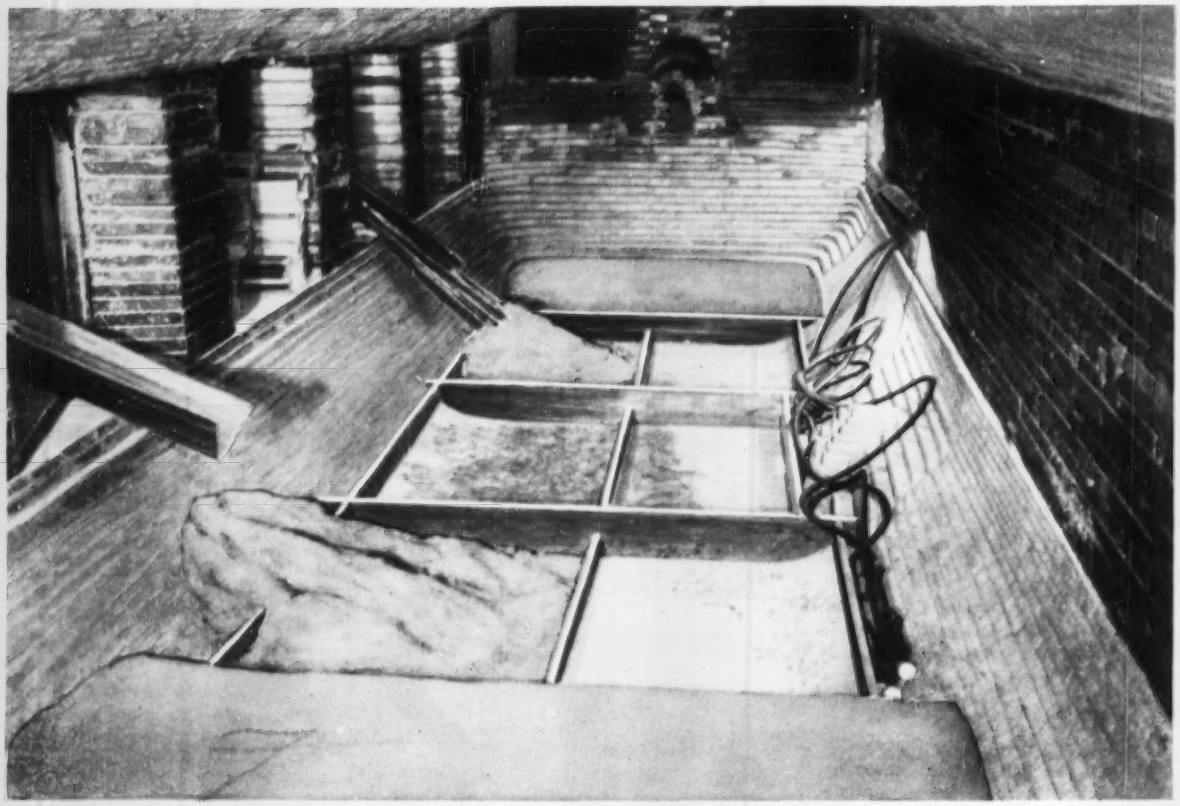
for a fabulous finish . . .



Jewel Brand
ABRASIVE BELTS

for grinding, sanding, polishing — metal, wood, leather, plastics, rubber.

ABRASIVE PRODUCTS, INC.
511 Pearl Street
South Braintree 85
Massachusetts



BETHLEHEM STEEL open hearth at Johnstown, Pa. shown during a bottom installation of Permanente 165 ramming mix

INCREASE YOUR OPEN HEARTH PRODUCTION

WITH PERMANENTE 165 RAMMING MIX!

THE superiority of Permanente 165 ramming mix for open hearth bottoms is proved by continuing reports from many of the country's leading steel mills.

Many furnaces are "tripling"... original tap holes are lasting up to 80 heats without repiping ... production records are being broken, with extra tonnage every hour.

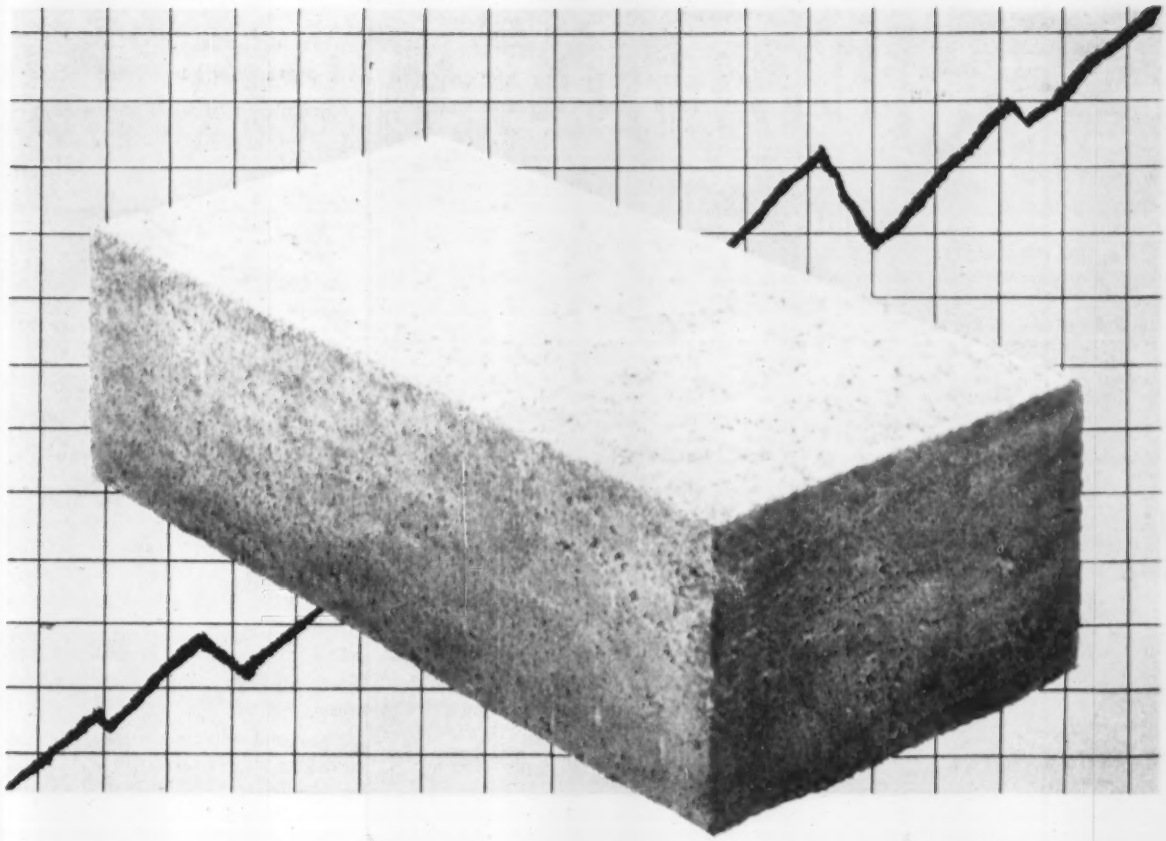
Chances are that the proved superiority of a Permanente 165 bottom, based on records of scores of furnaces, can boost *your* open hearth production well above current rates.

Your Kaiser refractory engineer will give prompt attention to your refractory problem—will offer, where desired, research, design and installation service to give you maximum production most economically. Write for descriptive literature on (1) Permanente 165, (2) the companion ramming mix, Permanente 84, and (3) Permanente Refractory Brick.

Principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, Calif. First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Basic Refractory Brick and Ramming Materials



INCREASE YOUR OPEN HEARTH BOTTOM LIFE

WITH PERMANENTE PERICLASE BRICK!

WITH Permanente Periclase "D" burned brick as the subhearth under the Permanente 165 you get *higher MgO per unit volume than possible with any other refractories available today.*

Permanente Periclase "D" bricks provide 9.43 lbs. of MgO per 9" equivalent, plus *maximum* density with absence of connected voids. Used in combination with Permanente 165 you are sure of the ultimate in bottom safety and durability.

Many of the nation's largest steel producers rely on Permanente Periclase Bricks for these quality advantages:

Pre-shrunk, accurately-sized periclase grains derived from seawater magnesia • Ceramic bond achieved through solid phase reaction • Absence of liquids at operating temperatures • High refractoriness • Maximum density; absence of connected voids • Excellent volume stability.

Permanente Periclase Brick for the Steel Industry:

PD-B (Periclase "D" burned) brick for open hearth and electric furnace bottoms. Low in iron, lime and silica. Chrome free. Maximum MgO in bottom.

PCA, PCA-MC (Periclase-Chrome "A"), plain and metal-encased for open hearth end walls, front walls and uptakes. Metal-encased for electric furnace sidewalls. High in MgO. Outstanding all-purpose refractory.

CPA-B (Chrome-Periclase "A," burned) for open hearth front and back walls. Controlled chrome additives result in highest resistance to spalling.

CPA-MC (Chrome-Periclase "A"), metal-encased for open hearth back walls, front walls. High hot load strength.

Installation advice on request

Producers of the most complete line of basic refractories

Castables and Mortars • Magnesite • Periclase • Deadburned Dolomite

and small business houses. It lists ways in which typed, written or drawn materials can be reproduced quickly and inexpensively. Plans are given for a self-sufficient printing department.

86. Stampings

Federal Tool & Mfg. Co.—4-page illustrated bulletin gives information on die and stamping costs of short run work, particularly of runs of under 1000 pieces. Specs for maximum blank size, thickness and blanking pressures are given.

87. Optical Pyrometer

Pyrometer Instrument Co. — Self-contained, direct reading Pyro optical pyrometer is subject of 8-page catalog No. 85. Technical information on optical pyrometry principles, illustrations of applications, features, maintenance and other data are included.

EDITORIAL ARTICLES
Available in Limited Quantities

88. Facts & Figures

Sixth annual edition of "Metalworking Facts and Figures" now available offers STEEL readers the most complete selection of statistics on production of goods by the metalworking industry. Covered in these 48-pages of tables and graphs are such related subjects as labor, prices, earnings and many others.

89. 1954 Management Program

A program for management in 1954 is effectively presented in STEEL article taken from Yearbook issue entitled "Compass for Competition." Factors which bear on the new year's production outlook are review and tied in closely with preparations management should make to meet stiffening competition.

90. Metalworking in 1954

Special report taken from STEEL's Yearbook issue entitled "What Metalworking Management Expects in 1954" presents results from questionnaires directed to more than 5000 metalworking executives. Survey substantiates the point that today's expectations of industry executives are likely to be tomorrow's realities.

TO GET LITERATURE . . .
reviewed in this column, circle corresponding item number on reply card found in literature insert.

NEW PRODUCTS and equipment

(Continued from p. 84)

black, coal or coke dust and metal dust. They meet National Electrical Code requirements and are approved by Underwriters for Class II, groups E, F and G hazardous locations.

Enclosure consists of a formed steel box and front with welded

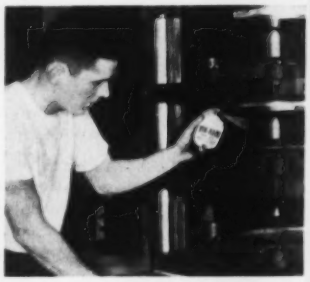
steel corners. External, dust-tight handle mechanisms operate the branch circuit breakers. Square D Co., Dept. ST, 6060 Rivard St., Detroit 11, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Mold-Release Liquid

. . . simple spray application

Mold release liquid, type R-2 is designed for compression molding, laminating, casting and layup



molding. It adheres to mold surfaces, preventing sticking of materials.

Mold release is packaged in a 12-ounce can suitable for easy spray use. It is crystal clear and will not discolor any type or color of plastics. No oily film or burned areas are left on the surface. In addition, it has no effect on paintability or adhesion. Vin-Rock Inc., Dept. ST, 8211 Almira Ave., Cleveland, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Depressed Center Wheels

. . . glass fiber reinforced resin

Carboflex depressed center grinding wheels—glass fiber-reinforced resin bond—combine good cutting

action with high strength and resistance to cracking and high safety factor. They are applicable for rough grinding, weld removal, cutoff and slotting operations for ferrous and nonferrous metals and nonmetallics.

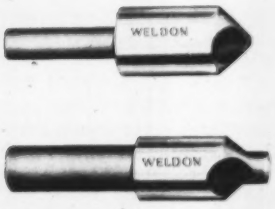
Designed with a knurled back in addition to the knurled face, wheels enable the operator to cut with both sides and the periphery without any initial dressing. They are available in sizes of 7 and 9⅛ inches in diameter, ⅛, 3/16 and ¼-inch thick and contain a ⅞-inch arbor. Carborundum Co., Dept. ST, Niagara Falls, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Countersinks, Deburring Tools

. . . single edge prevents chatter

Cutting ease and a single cutting edge, reported to prevent chatter, are design characteristics of this line of countersinks and deburring tools. Both tools, regularly made for right-hand cut in

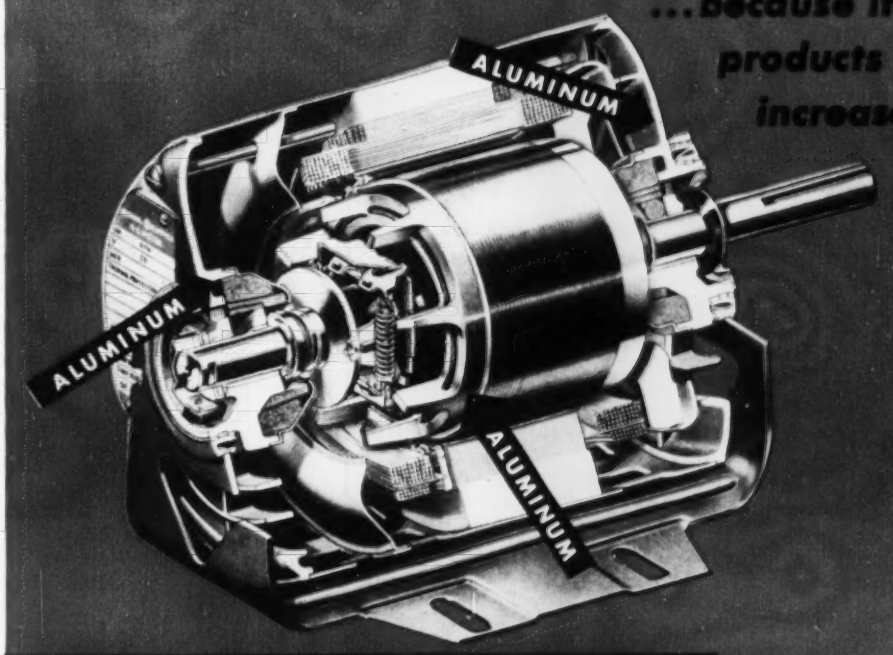


standard sizes, are also available to specification for special requirements. Weldon Tool Co., Dept. ST, 3000 Woodhill Rd., Cleveland 4, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

WHY ALUMINUM?

...because it improves products and increases sales!



CASE HISTORY: Fractional-hp Motor

General Electric gave industry a brand new concept in motors with its all-new Form G fhp motor. These completely new . . . completely different motors give full NEMA performance at up to *50% less weight . . . 40% less bulk, rating for rating!*

Among the new features of this smaller, lighter, more versatile motor is an increased use of aluminum. The newly designed aluminum rotor is practically indestructible and is cast integral with the rotor fan blades—making for cooler running. The aluminum end shields help provide neater appearance and better conductivity of heat away from the motor bearings, helping to give longer bearing life.

Perhaps you, too, can find better uses for aluminum for weight saving, neater appearance, heat conductivity, and as an electrical conductor. All in all, from both a manufacturing and the user's standpoint, aluminum is the ideal metal to use in a great variety of electrical products.

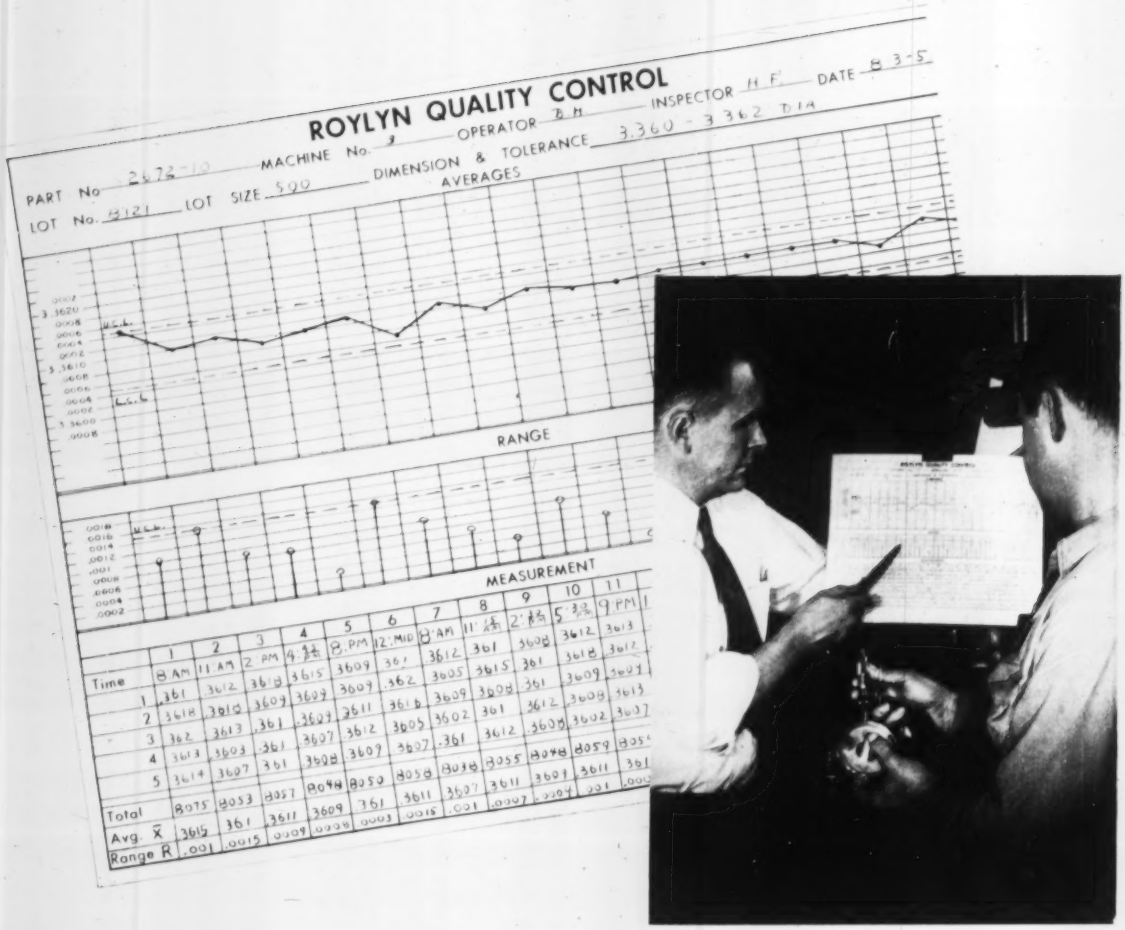
In almost every industry a change to aluminum has provided increased manufacturing efficiency, improved design and at the same time increased sales appeal. Ask Reynolds Aluminum Specialists to help you apply aluminum's advantages to your products and production.

Call the nearby Reynolds office listed under "Aluminum" in your classified telephone directory. Also write for a complete index of design and fabrication literature. Reynolds Metals Company, 2520 South Third Street, Louisville 1, Kentucky.

See "Mister Peepers" Sundays on NBC-TV. Consult local listing for time and station.

REYNOLDS ALUMINUM

MODERN DESIGN HAS ALUMINUM IN MIND



Trial Technique FOR QUALITY CONTROL

Before management at this plant adopted in-process quality control, it had engineers make three-week trial run on random sampling of machines. Here's what they did

IF you have been thinking of giving quality control a try, you can profit by the experience of Roylyn Inc., Glendale, Calif.

Before management at the California plant "bought" in-process, statistical quality control, engineers did a short trial run on a random sampling of machines, according to Robert H. Pueschel, quality control engineer. Company makes such things as quick disconnect couplings and coupling valves.

Only easily-checked dimensions, such as inside and outside diameters, depths and over-all lengths, were used. Five parts were checked at fairly regular intervals; then data were recorded on a quality control chart. Figures were used to find averages and ranges.

Objectives—In general, the trial (it lasted about three weeks) was designed to familiarize operators and inspectors with the procedure; to roughly estimate operator and machine capabilities; to see if control charts are necessary and, if so, practical; and to provide data for estimating lot quality.

Findings—At a follow-up management meeting, quality-control men reported:

1. Both operators and inspectors approved of the charts; they tell the operator how he is doing, especially on dimensions he checks with "go" and "no go" gages. Systematic procedure affords the floor inspector a better means of keeping records.

2. Operators can make pieces more uniform; and machines are capable of repeating with a greater consistency than previously assumed.

3. Quality control charts (at Roylyn) are practical on runs of over 100 pieces. Different approach is needed for short runs.

4. Greater uniformity and quality control charts are synonymous. Information shows if operations are on the high or low side; and with minor adjustments, possibility of out-of-tolerance parts can be reduced. Inspectors and foremen can see at a glance where the operation is going and make suitable recommendations.

5. By making a histogram of individual readings and computing standard deviation, an accurate estimate of lot quality can be made. If tolerance limits are exceeded by standard deviations, percentage of parts that may be out of tolerance can be estimated.

Procedure—Example of how test runs can be made: In a lot of 500 flush caps, diameter tolerances (3.360 to 3.362 inches) on sealing surfaces were checked—see chart headed Roylyn quality control.

At regular intervals (usually every 4 hours), last five pieces machined were gaged. At 8 a.m., for example, five dimensions were written under column 1 in measurement section. Total was noted and average (3.3615 inches) and range (0.001 inch) were found.

Average may be computed by dividing the total by five or multiplying the total by two—mark off one more decimal if latter is used. Range is difference between lowest and highest reading in the five.

Tolerance spread on averages and range charts can show differences of 0.001, 0.0005, 0.0002 or 0.0001 inch. Here 0.0002 inch was used.

When two or more points have been plotted on the averages chart, connect them with a straight line. Tentative control limits (marked with dotted line) can be computed after ten samples of five have been plotted—see formulas at bottom of frequency distribution chart.

When a point on the chart falls outside control limits, it is said to be out of control. Cause should be investigated. Completed chart should accompany work order to

MANY HAVE VESTED INTERESTS IN QUALITY CONTROL

Management: It has a running record of "how we are doing," with assurance of greater product uniformity.

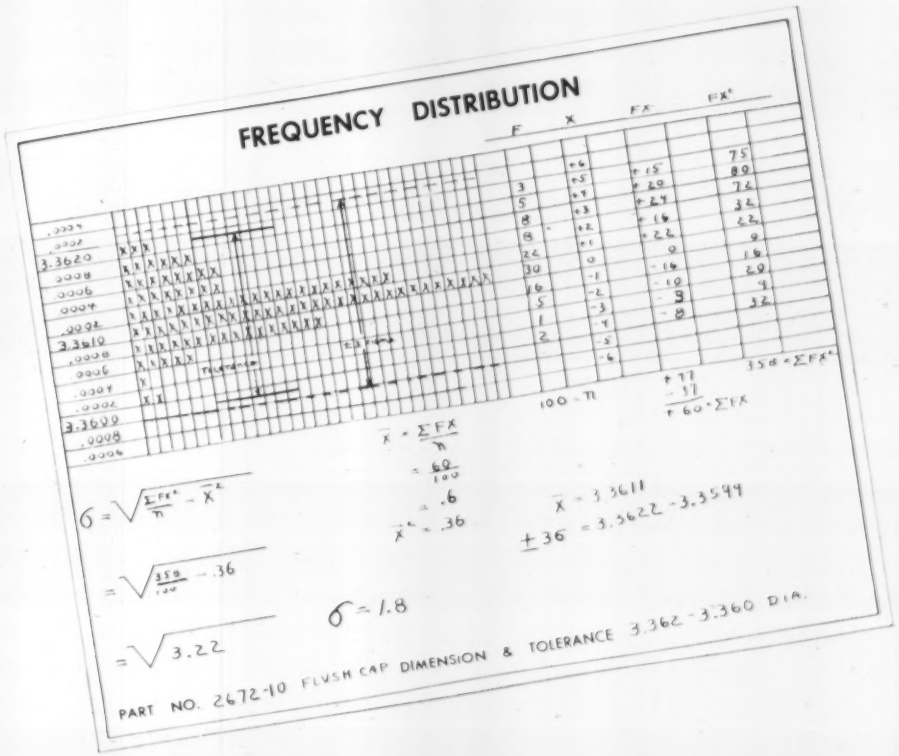
Production: They benefit by having more information on how process is doing.

Assembly: They're assured of more uniform parts—and can also help engineering inaugurate system by pointing out trouble spots.

Planning and Processing: Their schedules and knowledge of machine capabilities can be of value in working out program.

Cost Estimating: People here can tell if process changes are economical.

Advertising and Sales: Systematic statistical quality control is a plus plug.



CLASSIFICATION OF DEFECTS

		1	2	3	4	5	6	7	8	9	10	
PART NO. 1904, 1907, 1909	DATE											
PART NAME Nut-Tube Union	LOT SIZE	(225)										
	LOT NO.											
	SAMPLE SIZE	(35)										PROC. AVG.
CRITICAL NONE												
MAJOR A/L 2.5												
101. Depth of Counterbore (over)												
102. Min. Depth Full Threads (under)												
103. Thread Requirements												
104. Concentricity, Threads & Counterbore												
MINOR "A" A/L 4.0												
201. Outside Diameter(s) (stock size)												
202. Inside Diameters												
203. Surface Roughness												
204. Lengths of O.D.'s (when specified)												
MINOR "B" A/L 6.5												
301. Slots, Width & Depth (when specified)												
302. Location, Holes												
303. Diameter of Holes												
304. Depth of Counterbore (under)												
305. Min. Depth Full Threads (over)												
306. Diameter & Angle, Countersink												
307. Workmanship (burrs, etc.)												
308. Length Overall												
REMARKS:	ACCEPTED											
	REJECTED											
	INSPECTOR											
	VENDOR											

SAMPLING TABLE

LOT SIZE	SAMPLE SIZE	ACCEPTABLE QUALITY LEVELS 0.65 Ac	0.65 Re	1.0 Ac	1.0 Re	1.5 Ac	1.5 Re	2.5 Ac	2.5 Re	4.0 Ac	4.0 Re	6.5 Ac	6.5 Re	10. Ac	10. Re
2 to 8	2	Min. Sample Size (25)		Min. Sample Size (15)		Min. Sample Size (10)		Min. Sample Size (7)		Min. Sample Size (5)		Min. Sample Size (3)		0	1
9 to 15	3	↓		↓		↓		↓		↓		0	1	0	1
16 to 25	5	↓		↓		↓		↓		0	1	0	1	Use Next Sample	
26 to 40	7	↓		↓		↓		0	1	0	1	Use Next Sample		1	2
41 to 65	10	↓		↓		0	1	0	1	Use Next Sample		1	2	2	3
66 to 110	15	↓		0	1	0	1	Use Next Sample		1	2	2	3	3	4
111 to 180	25	0	1	0	1	Use Next Sample		1	2	2	3	3	4	5	6
✓181 to 300	✓35	0	1	Use Next Sample		1	2	✓	3	✓3	4	✓5	6	7	8
301 to 500	50	Use Next Sample		1	2	2	3	3	4	4	5	6	7	9	10
501 to 800	75	1	2	2	3	3	4	4	5	6	7	9	10	13	14
801 to 1300	110	2	3	3	4	4	5	6	7	8	9	12	13	16	19
1301 to 3200	150	3	4	4	5	5	6	8	9	11	12	17	18	24	25
3201 to 8000	225	4	5	5	6	8	9	11	12	17	18	24	25	34	35
8001 to 22,000	300	5	6	7	8	10	11	14	15	20	21	32	33	44	45

final inspection, then filed with work order for future reference.

Acceptance Sampling—This procedure (following Mil-Std.-105A) is used by the company for receiving and final inspection. When adopted, it was worked into the existing inspection scheme to avoid disruption and training of inspectors.

Basic document here is the classification of defects (CD). Company reduced repetitive paperwork and possibility of errors by combining all sizes of a series into one CD sheet.

While the dimensions differ, their relationship and importance remain the same. Each CD sheet can be used for the inspection of ten lots, with space for a summary of lot records and computing process average.

Sheets have four categories: Critical defects and major and minor A and B acceptable quality levels (AQL). When one item has more than one defect, it is still listed as only one. When ten lots are completed, quality control engineer computes process average.

Sampling Tables—These are taken directly from Mil-Std.-105A. Here is how they are used:

Say lot size is 225. Under lot size on sampling table, the range, 181 to 300, is found; next column shows sample size is 35. If major AQL is listed as 2.5, two rejects are acceptable; three result in rejection of the lot for majors. If minor A is classed as 4.0, three defects are acceptable, while four are not. Under a minor B listing of 6.5, accept and reject standards are 5 and 6 respectively.

Lot Quality—When it is desirable to estimate lot quality to establish where the process has centered or if distribution is normal, frequency distribution charts and standard deviation are used.

With a minimum of detailed explanation of the process and formulas used, a clear, accurate, visual estimate of lot quality is presented when the chart has been completed and tolerance limits indicated.

Since chart shows estimated lot quality graphically, it is easily understood and particularly advantageous as a report to supervisory personnel and management, says Quality-Control man Pueschel.

Need small bearings that can carry heavy loads?

here's how manufacturers of materials handling equipment get them with NEEDLE BEARINGS

Leading manufacturers of lift trucks, industrial trolleys and conveyors, cranes, hoists and other types of materials handling equipment specify Torrington Needle Bearings because of their high capacity and their compactness.

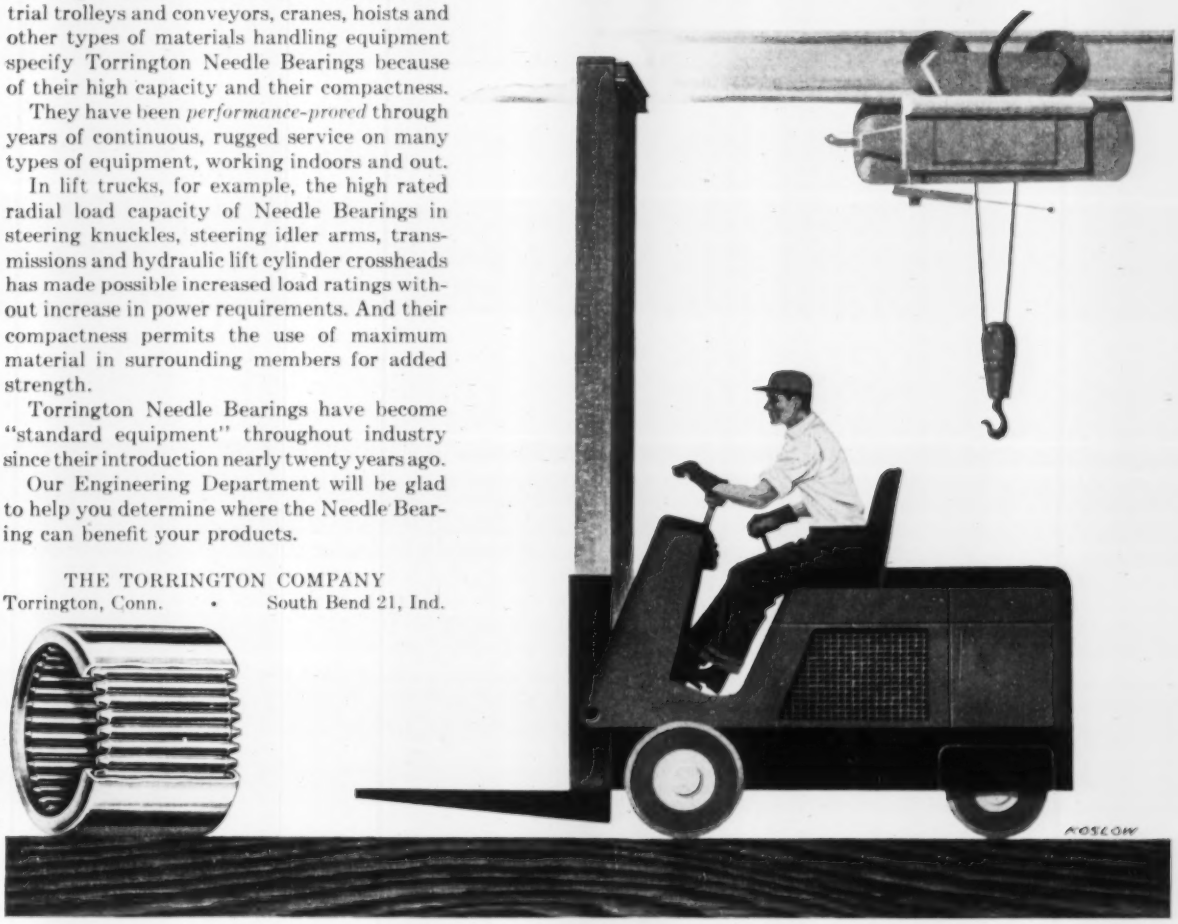
They have been *performance-proved* through years of continuous, rugged service on many types of equipment, working indoors and out.

In lift trucks, for example, the high rated radial load capacity of Needle Bearings in steering knuckles, steering idler arms, transmissions and hydraulic lift cylinder crossheads has made possible increased load ratings without increase in power requirements. And their compactness permits the use of maximum material in surrounding members for added strength.

Torrington Needle Bearings have become "standard equipment" throughout industry since their introduction nearly twenty years ago.

Our Engineering Department will be glad to help you determine where the Needle Bearing can benefit your products.

THE TORRINGTON COMPANY
Torrington, Conn. • South Bend 21, Ind.



TORRINGTON *NEEDLE* BEARINGS

Needle • Spherical Roller • Tapered Roller • Cylindrical Roller • Ball • Needle Rollers

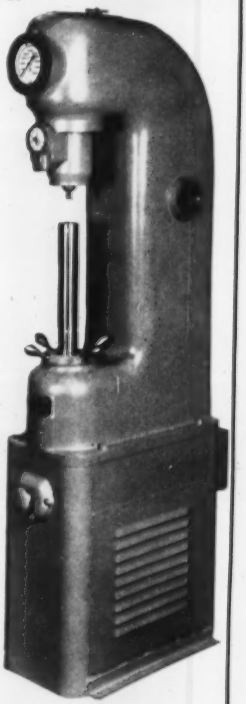
Trade-marks of leading materials handling equipment manufacturers who use Needle Bearings in their products.

MULTIPLY MANPOWER LEWIS-SHEPARD The Master Line
MAXWELL MANNING MOORE
CLARK EQUIPMENT
YALE
P&H
BUDA ESTABLISHED 1880
TOWMOTOR
AMERICAN MONORAIL
CROWN
HYSTER
NILES CRANE & HOIST CORP. ENGLEHARD
Automatic
MERCURY
WHITING

YOU CAN ALWAYS DEPEND ON *Steel City* TO FURNISH THE *Right* BRINELL HARDNESS TESTER FOR *Your* NEEDS

Individual requirements differ. Laboratory needs are far different from production needs. The Brinell Hardness Tester you buy must be exactly suited to your application. Our complete line of Brinell Testers includes the correct type for practically every need. Our reputation in this field since 1914 proves that if we do not have what you require, we can easily convert one of our standard models to fit your specifications. On this page are illustrations of two typical Steel City Brinell Testers. Other types available include portable, bridge type, deep-throated and long stroke designs and models to fit into your conveyor line. Write to us for a descriptive catalogue or address of our nearest sales representative.

Dead weight type, manually operated, bench mounted Brinell Hardness Tester. Weights are linked mechanically to ball penetrator. Dash pot below weights makes load application gradual and smooth. Instantaneously select any load 500 kg. to 3000 kg. Exceptionally accurate; low maintenance. Also available as floor model and motorized.



Direct reading type, hydraulically operated, motor driven Brinell Hardness Testing Machine for production line testing. "Direct reading" feature eliminates time-consuming use of Brinell microscope, sometimes avoids spot-grinding. Interval timer automatically controls testing cycle. Simplified knee switch operation. Tests up to 800 pieces per hour.

MANUFACTURERS OF MACHINES FOR TESTING PHYSICAL PROPERTIES OF METALS

Brinell, Ductility, Universal, Tensile, Compression, Transverse, Hydrostatic, Special Testing Machines, Flex-Tester and Proving Instruments

Steel City Testing Machines Inc.

8819 LYNDON AVE. • DETROIT 21, MICH.

Recorder Adds A Variable

Versatile unit receives four variables. It can also be adapted as controller

MINIATURE RECORDER capable of receiving four variables, instead of the conventional three, has been developed by Fischer & Porter Co., Hatboro, Pa.

Capable of housing a maximum of four simple pneumatic receivers, instrument can record two variables and indicate two more or record three variables and indicate the fourth, as well as performing many simpler functions. It is suitable for standard, graphic or semi-graphic panel mounting.

Versatile—To transform the recorder into a recording-controller offering the advantages of a loading station, a standard F & P field-mounted pneumatic controller may be plugged into the back of the recorder chassis. Such a recording-controller unit might, for example, record signals from both a wild line and a controlled line and, in addition, indicate both set point signal and valve signal.

Large external automatic-manual transfer knob and a set point knob allow easy adjustment and bumpless transfer. Furthermore, the set-point indication, instead of being mechanically adjusted by the knob, is the result of a true pneumatic signal tapped from the set point pressure regulator pneumatic line to the controller.

Open for Check — Instrument takes 6 x 6 inches of panel space; uses a 4-inch rectilinear strip chart available with either electric or pneumatic drive.

Unlike many recorders, the Ratographic can continue to function even while pulled forward for examination of the instrument's internal mechanism.

Automatic Piston Gaging

Sheffield Corp. has developed a gaging machine that automatically inspects seven dimensions of a piston and segregates acceptables and rejects at a rate of 2200 per hour. Dimensions checked include diameters of top land, top, second and oil grooves and widths of these grooves. Firm says the unit hits 100 per cent efficiency.

CALENDAR
OF MEETINGS

January 11-13, Truck-Trailer Manufacturers Association Inc.: Annual meeting, Boca Raton hotel and club, Boca Raton, Fla. Association address: 1024 National Press Bldg., Washington 4. Managing director: John B. Hulse.

January 11-15, Society of Automotive Engineers Inc.: Annual meeting and engineering display, Hotels Sheraton-Cadillac and Statler, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

January 11-16, Association of Steel Distributors: Annual meeting, Lord Tarleton hotel, Miami Beach, Fla. Association address: 29 Broadway, New York. General counsel: Morris Rosoff.

January 14-16, National Tool & Die Manufacturers Association: Board of trustees and committee meeting. Hotel di Lido, Miami Beach, Fla. Association address: 907 Public Square Bldg., Cleveland 13. Executive secretary: George S. Eaton.

January 15-16, Machinery & Allied Products Institute: Second session, seventh conference on capital goods economics. Edgewater Beach hotel, Chicago. Information: Secretary, Charles W. Stewart, 1200 18th St. NW, Washington 6.

January 17-19, Institute of Scrap Iron & Steel Inc.: Annual convention and exhibit. Hotel Statler, Washington. Institute address: 1729 H St. NW, Washington 6. Executive vice president: Edwin C. Barringer.

January 18-22, American Institute of Electrical Engineers: Winter general meeting, Statler hotel, New York. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

January 19-21, Caster & Floor Truck Manufacturers Association: Winter meeting, Hotel New Weston, New York. Association address: 27 E. Monroe, Chicago 3. Executive secretary: H. P. Dolan.

January 20, American Society of Body Engineers: Annual meeting, Detroit. Society address: 100 Farnsworth Ave., Detroit 2. Secretary: Edward Wachnicki.

January 20-21, Steel Shipping Container Institute Inc.: Winter meeting, Hampshire house and Hotel Pierre, New York. Institute address: 600 Fifth Ave., New York 20. Secretary: L. B. Miller.

January 21, American Coke & Coal Chemical Institute: Western regional meeting, Drake hotel, Chicago. Institute address: 711 14th St. NW, Washington 5. President: Samuel Weiss.

January 21-22, Steel Plate Fabricators Association: Annual meeting, Palmer House, Chicago. Association address: 37 W. Van Buren St., Chicago 5. Secretary: J. Dwight Evans.

January 21-22, National Industrial Conference Board Inc.: General session for all associates, Hotel Astor, New York. Board address: 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

January 22, Malleable Founders' Society: Semi-annual meeting, Hotel Cleveland, Cleveland. Society address: 1800 Union Commerce Bldg., Cleveland 14. Managing director: Lowell D. Ryan.

January 25-26, Industrial Furnace Manufacturers Association Inc.: Annual meeting, Warwick hotel, Philadelphia. Association address: 412 Fifth St. NW, Washington. Secretary: T. F. Sheckels.

January 25-28, Plant Maintenance & Engineering Conference and Show: Hotel Conrad Hilton and International Amphitheatre, Chicago. Information: Clapp & Poliak Inc., 341 Madison Ave., New York 17.

January 26, Cutting Tool Manufacturers Association: Annual meeting, Lochmoor Club, Detroit. Association address: 416 Penobscot Bldg., Detroit 26. Executive secretary: Martin J. Ewald.

January 29, Cleveland Chamber of Commerce: Northern Ohio personnel and executive conference, Hotel Carter, Cleveland. Information: William G. Donaldson, Cleveland Chamber of Commerce, Union Commerce Bldg., Cleveland.

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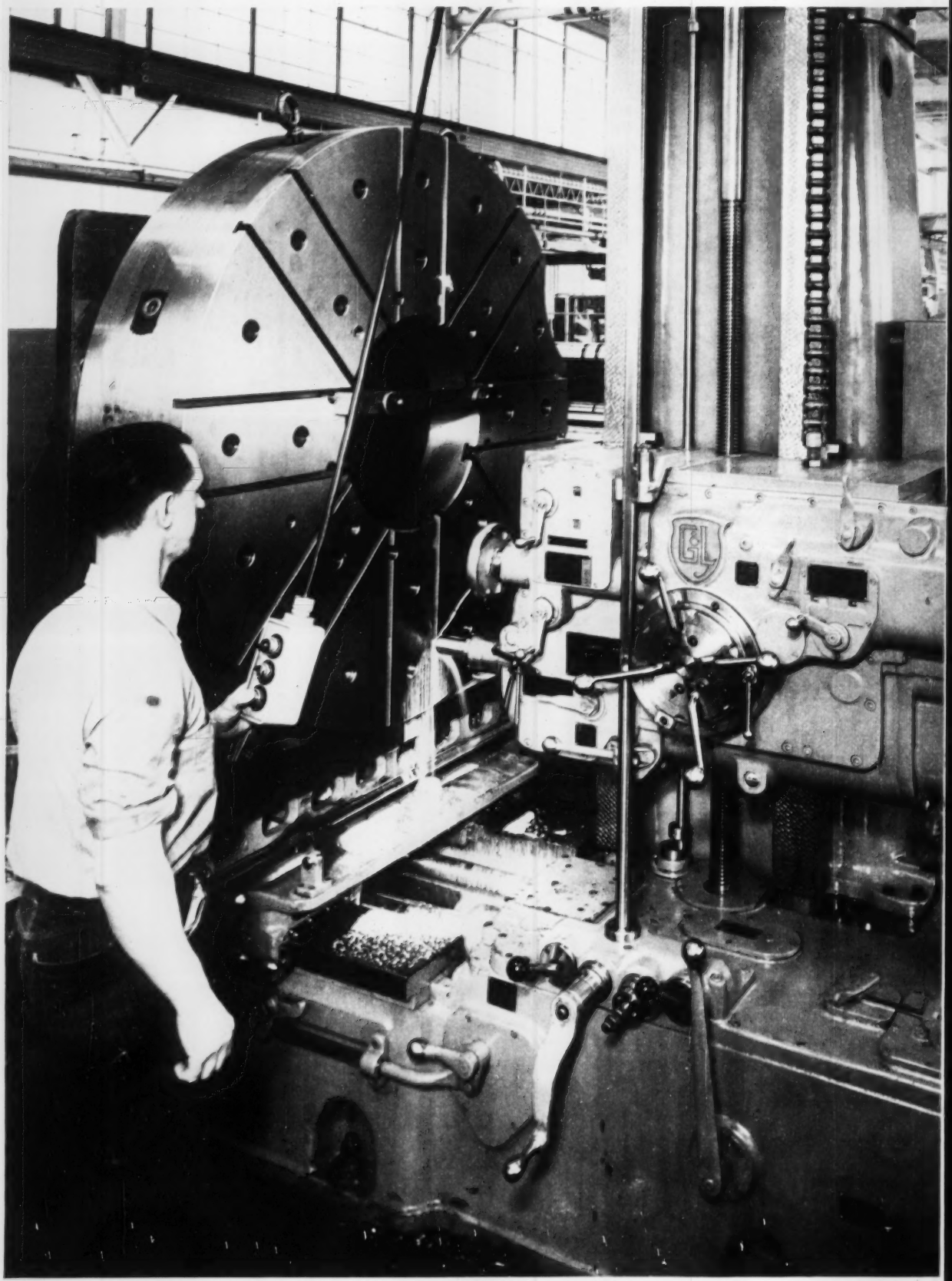

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For either long production runs or custom jobs, G&L 30-Series machines offer you many advantages to speed work, cut costs and increase shop flexibility. They feature an unusually wide range of speed and feed selections, extreme rigidity and accuracy, plus easy, positive control.

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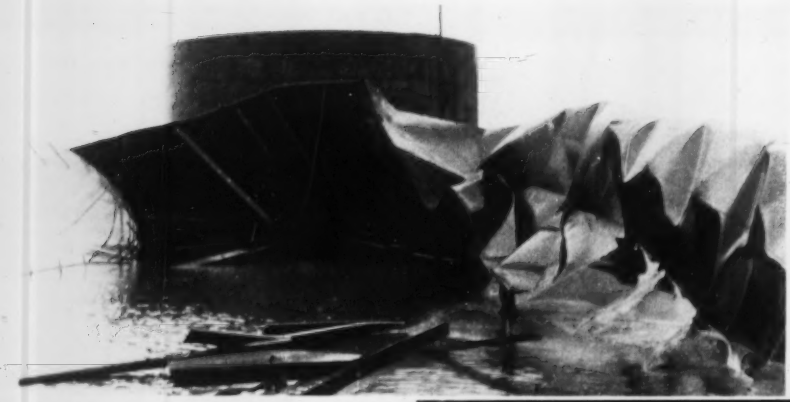
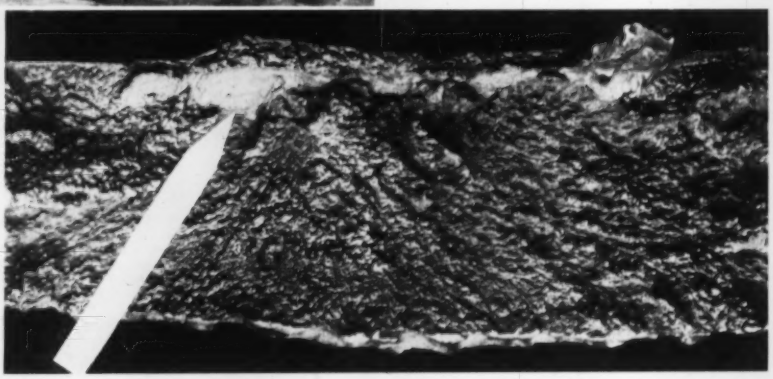


Gas-oil storage tank (150 feet in diameter by 48 feet tall) failed under three-fourths head of water

Cross-section of a repaired weld where failure started. Arrow points to voids caused by replacement metal



Poor Welds . . .

CAN START BRITTLE FRACTURE

Welding defects and improper repairs led to complete failure of two large storage tanks in English refinery. In both cases, cracks propagated in a brittle manner

By F. J. FEELY and M. S. NORTHUP
Standard Oil Development Co.
Esso Engineering Dept.
Linden, N. J.

A MILD STEEL tank for crude oil (140 feet in diameter by 54 feet tall) failed completely after it was filled to 48 feet in a water test. Tank shell split into two sections, with fractures across plates rather than at welds.

One month later, a large gas-oil tank at the same refinery, Esso Petroleum Co. Ltd., Fawley, England, failed under the same conditions.

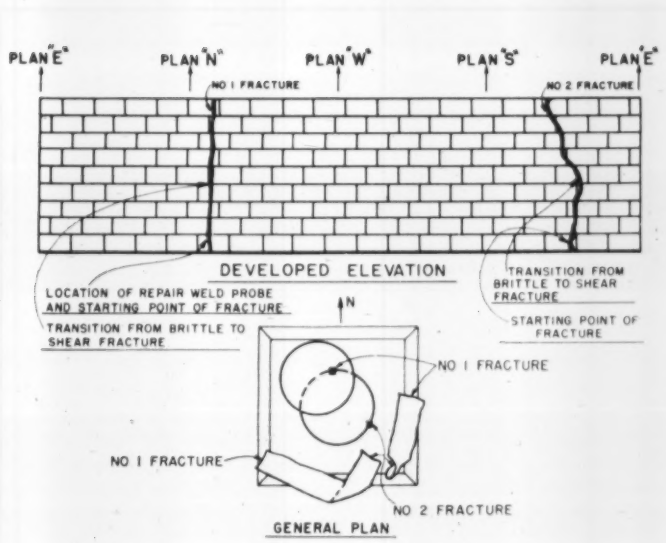
The Facts—Month before failure of the first tank, a crack appeared in a weld probe replacement in the first horizontal joints (both tanks followed the API 12-C specification, with the exception of 100 per cent penetration of welding called for in all horizontal seams). Crack was about 24 inches long and extended across the joint into the first and second course plates. At the time, the tank, which was under test, contained 35 feet of water. So it was drained and repaired. Repair was about half way around the circumference from the final failure.

Second tank (it failed under a head of 38 to 39 feet of water) had cracks in welds and some lack of fusion before test was started. All defects reported were repaired under supervision of the owner's inspector, and these repaired areas did not fail.

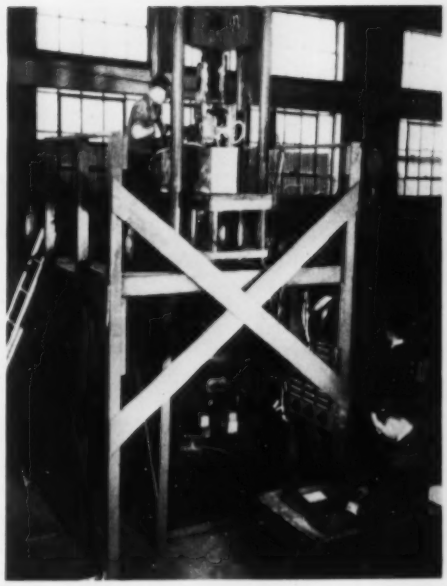
The Clues—Failure of the first tank started at a weld probe replacement across the first horizontal joint. Crack progressed vertically in both directions, the plate failing in a brittle manner up to the fifth course, where it changed to a shear type of failure. Thickness at this point was 19/32 inch. Rupture was entirely within the plate material.

Replacement weld metal did not penetrate to the bottom of the groove. A single cover bead was laid over the opening, at the back of the probe location. No back chipping was done to remove slag and provide a clean surface for the back weld. Procedure left a void at the root, where the weld metal had not fused to the bottom of the probe hole. Void was about 2 inches long, and, at places, extended for 20 to 25 per cent of plate thickness.

Second Failure — Here fracture started at a partially repaired crack in the top 10 inches of a weld in a vertical joint in the first course. It extended about 2 inches into the second course plate. Surface of old crack was coated with a black oxide film apparently formed during later welding. Final fracture progressed vertically in both directions.



Side and top view sketches show how crude oil tank failed. It was 140 feet in diameter by 54 feet tall



Technician using impact gun is driving a steel wedge into a notch to determine if complete failure occurs

Steel failed in a brittle manner in the thicker plate and changed to a shear fracture in the fourth course, where thickness was 21/32 inch.

The rupture proceeded for the greater portion of its length through plate material rather than welds. But in fifth course, it traveled through a vertical joint —there was a serious lack of penetration through the length of this weld.

Old crack in vertical weld (where failure started) had been partially but improperly repaired. Crack had not been entirely chipped out before rewelding. Only a cover bead was laid over the crack in the second course plate. This crack extended almost through the full thickness of the plate.

The Findings—Initiating cracks in both tanks were laid to failure to insure high-standard welding: In the crude tank (the first to fail), faulty replacement of a weld probe sample; and in the gas-oil tank, failure to properly repair a crack in a vertical weld. It was generally agreed that these factors explained the start of cracks at these locations.

Both failures were characterized by their suddeness, high-speed of propagation, apparent brittleness of the heavier plate and the fact that stresses were not abnormally high. In many respects, both failures were similar to those of welded ships and bridges.

Brittleness — Next step was to examine the steel plate, with particular attention to its resistance to brittle fracture.

Impact tests of the steel were made with these considerations in mind: Ship failure investigators of the U. S. government have found in all cases of brittle failures steel plate had Charpy V-notch impact values of 10 ft lbs or below. In tests down to —150° F, results show materials should have Charpy U-notch impact values of 15 ft lbs or higher at the lowest operating temperature to insure against brittle fracture. American Bureau of Shipping considers 20 ft lbs (Charpy U-notch) as a satisfactory impact value at the operating temperature.

On the basis of the above, it was evident that steel in both tanks was either close to or in the brittle range at the operating temperature (about 40° F) at time of failure. For example, crude tank had Charpy V-notch values of from 3 to 20 ft lbs at 32° F.

Two Stages—Studies show brittle failures occur in two stages. First, a crack must be started, usually from a notch effect of some sort; and second, initial crack must propagate at high speed through the steel. Usually a high stress is present when the crack initiates. A sharp notch (a crack or sharp-cornered metal discontinuity) are serious stress raisers. This condition was present when both tanks failed.

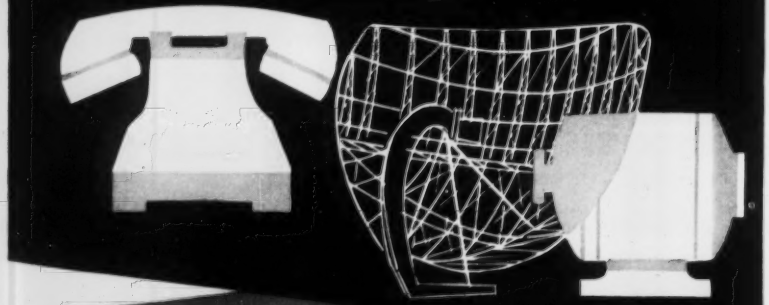
Recommendations — Investigation showed that in large tanks (with the type of steel used) failure to insure a sufficiently high standard of welding can result in extremely serious consequences. It is doubtful if either failures would have occurred if defects had been absent. This emphasizes need for better quality welding, closer supervision and more intensive inspection.

Probe samples are undesirable because they do not adequately evaluate welds; and their replacement is an opportunity for defects.

British tank plate used was entirely within specifications. For example, composition of first course in crude storage tank: Carbon, 0.165; silicon, 0.015; sulphur, 0.036; phosphorus, 0.024; manganese, 0.54; nickel, 0.86; chromium, 0.02; molybdenum, trace; copper, 0.13; vanadium, trace; and arsenic, 0.030.

But, it was found, this steel cannot be relied upon to have sufficient notch toughness in plates of heavier thickness. Steel with better impact properties should be used.

a special message for producers of electrical equipment



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ON ALUMINUM Iridite gives you a choice of natural aluminum, a golden yellow or dye colored finishes. No special racks. No high temperatures. No long immersion. Process in bulk.

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WANT TO KNOW MORE? We'll gladly treat samples or send you complete data. Write direct or call in your Iridite Field Engineer. He's listed under "Plating Supplies" in your classified telephone book.

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Reclaiming Compressors

AMONG heavy duty compressors made by this engine manufacturer is a type used widely in chemical plants and pipeline installations where gases are often highly corrosive, due to the presence of sulphur or other elements, and make maintenance a definite problem.

Since the rods must be operated without lubrication to prevent contamination of gases, galling and subsequent damage to the packing frequently occurred. Also, since the rods are used in double-end cylinder compressors this permitted leakage of the product and contamination of the air.

No More Galling—The company originally tried metallizing on shafts returned by users for reconditioning and found that they not only lasted several times longer from the usual standpoint of diameter loss, but that galling no longer occurred. Damage to packing and leakage was also eliminated.

METALLIZING RODS
. . . protects from corrosive gases

As a result of their experience with the repair of piston rods by metallizing, all new piston rods to be used for corrosive gases are now made of carbon steel and metallized with stainless in the process of manufacture.

Several sizes of compressors are made in two, three and five-cylinder models from 12-inch bore by 14-inch stroke to 30-inch bore by 48-inch stroke.

It's outstanding!

EVERY MANUFACTURER who tries Roebling high carbon flat spring steel discovers the same thing... that this spring steel is absolutely unexcelled for dimensional and mechanical uniformity... for speeding production and cutting down rejects.

You always *pay* for the best when you buy flat spring steel... make sure you *get* it by specifying Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

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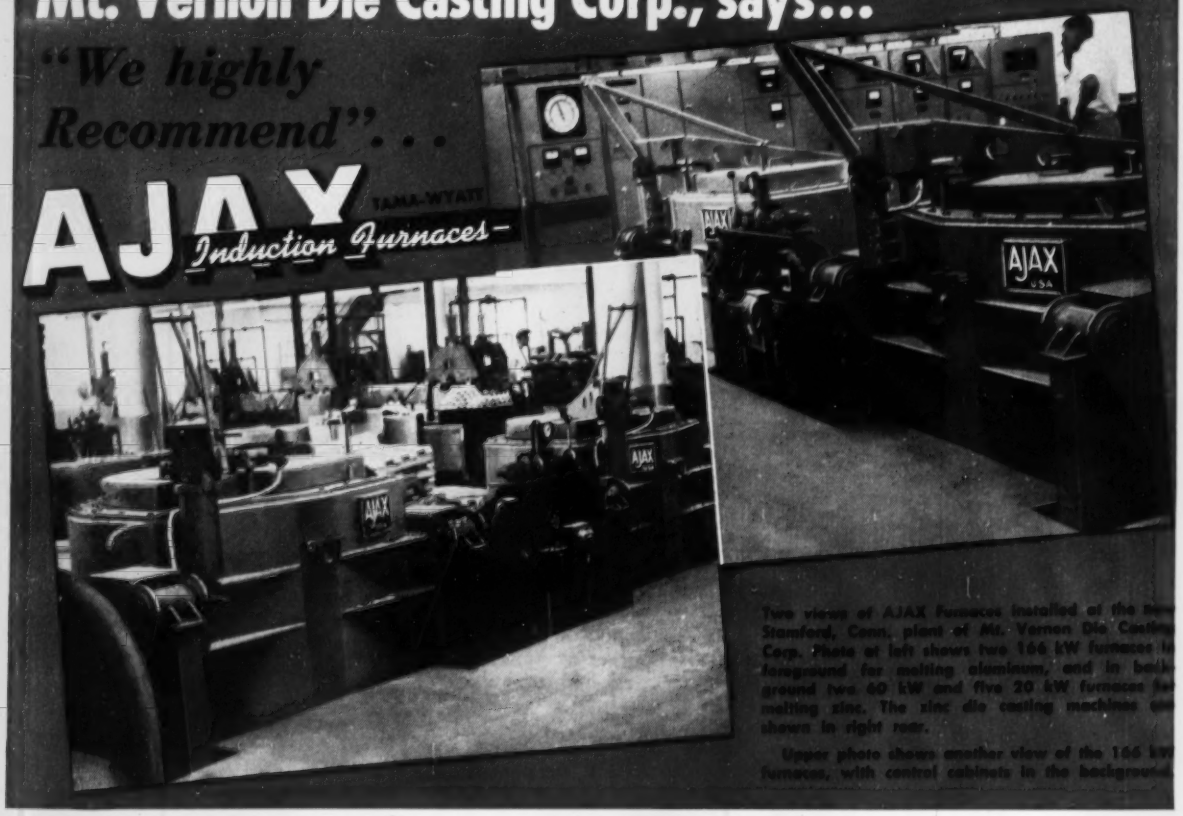
Mt. Vernon Die Casting Corp., says...

"We highly Recommend"...

AJAX TAMA-WYATT *Induction Furnaces*



Two views of AJAX Furnaces installed at the new Stamford, Conn. plant of Mt. Vernon Die Casting Corp. Photo at left shows two 166 kW furnaces in foreground for melting aluminum, and in background two 60 kW and five 20 kW furnaces for melting zinc. The zinc die casting machines are shown in right rear.

Upper photo shows another view of the 166 kW furnaces, with control cabinets in the background.

After a most satisfactory experience of more than five years with AJAX *low frequency* Induction Furnaces in their Mt. Vernon, New York plant, this company has now installed the furnaces shown above in their new modern plant at Stamford, Conn. "We are convinced," they state, "that economy of operation makes this type of furnace well worth while. We intend to continue to install them till all our die casting machines are fed by AJAX furnaces."

AJAX induction melting and holding furnaces are finding wide acceptance in the American die casting industry. Experience has shown that they greatly improve the overall performance. In particular, the absence of fumes and reduction of radiant heat give greater comfort to the operators. Electricity is one of the few commodities which have not increased in price in recent years.

Agitation, due to internal electrical stirring, insures uniform temperature and homogeneous mixing of the ingredients. Since linings are made of inert refractories, they cannot contaminate the melt. Temperature control is entirely automatic and keeps the molten mass within ±5° F., holding the metal at the lowest feasible casting temperature.

Amazingly low maintenance is the rule. Some furnaces operate for as long as 7 years without renewal of refractory lining. Rejects and metal losses are extremely low.

AJAX TAMA-WYATT

AJAX ENGINEERING CORP., TRENTON 7, N. J.

INDUCTION MELTING FURNACE

AJAX ELECTRO METALLURGICAL CORP., and Associated Companies
AJAX ELECTROTHERMIC CORP., Ajax Northrup High Frequency Induction Furnaces
AJAX ELECTRIC CO., INC., The Ajax Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax Wyatt Induction Furnaces for Melting

STEEL

January 11, 1954

Market Outlook

THE STEEL BUYER can expect more and more opportunities to save money—at least for the near term.

The savings will be made largely on freight charges, although some savings will come from price cuts on steel.

RAIL RATES MAY DROP—With keen competition prevailing in the steel market, steel sellers are increasingly absorbing some of the freight charges on shipments to buyers. Another prospect of a lowering of the amount of freight the buyers will have to stand is a proposal by the eastern railroads to make rate reductions of 18 to 20 per cent for shipments of many iron and steel products. Aim of those railroads is to combat truck competition.

PRICE CUTS—No widespread cuts in standard prices of steel are in prospect while renewal of a wage contract with the steelworkers is approaching. Most of the current contracts expire at the end of next June. However, some downward adjustments are being made. A producer of electric furnace silvery pig iron cut prices $3.50 a gross ton. This producer did not increase its price last summer when most other pig iron producers did. Now its price is 50 cents lower than that of December, 1950.

Another price cut is that made on high speed tool steel. The producer that initiated the cut lowered the price on its 18-4-1 steel from $1.66 a pound to $1.48. Reason given for the reduction: Lower world prices for tungsten ore.

Also going down are some of the few remaining premium prices. The blade of competition has become so keen that products that had been considered "special" or "noncompetitive" and which carried premium prices are being cut to standard levels.

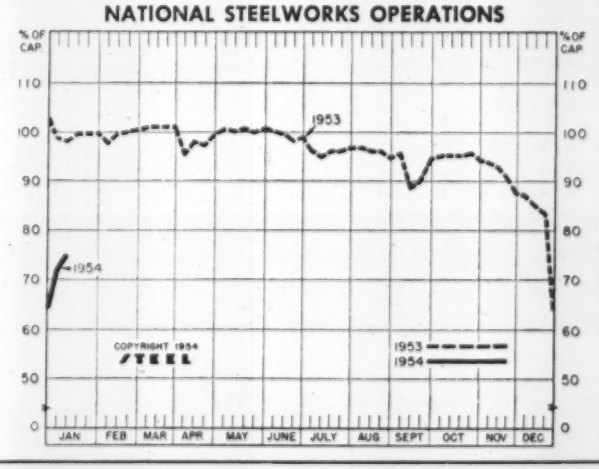
PRICE INCREASES—On the other hand, prices of silicon steel (used in electrical equipment) are being raised $3 to $18 a net ton.

Reflecting the easing in demand for steel are plates. Only a few weeks ago the plate demand outstripped supply. Now one of the principal producers of plates has laid off 200 employees because of a decline in demand for that product.

PLATES EASE UP—While plates are beginning to go into a period of adjustment, some other forms of steel that went into adjustment earlier show signs of recovery. Because of an improvement in demand for stainless and special alloy steels, Republic Steel Corp. called 125 employees back to work at its Canton, O., and Massillon, O., plants. Wire, one of the first products to feel the bump last year, is picking up rapidly in some areas. The over-all outlook for steel demand in February will be at least as good as January and probably better.

A LOOK AT PRODUCTION—Order books for January delivery did not fill completely, and as a result steel ingot output in the week ended Jan. 10 was only 1,788,000 net tons compared with 2 million a year ago. Rate of production was only 75 per cent of capacity, but helping make the rate look low is the increase in capacity that was taken into account in computations, beginning with Jan. 1. Until Jan. 1 the production rate was figured on a weekly capacity of 2,254,459 net tons. The capacity figure now being used is 2,384,549 tons. Yearly capacity on Jan. 1 was 124,330,410 tons, an increase of nearly 7 million tons over the year-ago figure.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Jan. 10	Change	Same Week 1953	Same Week 1952
Pittsburgh	88	+ 5*	105.5	98
Chicago	80	— 6.5*	106.5	102.5
Mid-Atlantic	82	— 2	100	101.5
Youngstown	80	+ 5	106	106
Wheeling	82	+14	101	104
Cleveland	86	+18*	98	94.5
Buffalo	78	+23	106.5	104
Birmingham	95	+15	108	104
New England	75	+ 2	89	91
Cincinnati	71	+ 3.5	93	103
St. Louis	73	—10	93	78
Detroit	93	— 0.5	104	104.5
Western	80.5	— 5.5	108	107.5
Estimated National Rate	75†	+ 3.5	98	96.5

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,384,549 net tons in 1954, 2,254,459 tons in 1953, and 2,077,040 tons in 1952.

†Based on revised national ingot capacity.

The Metalworking Outlook—p. 21 Technical Outlook—p. 69

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Jan. 5

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, standard, No. 1	$4.400	Bars, H.R., alloy	$8.675	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.767	Bars, H.R., stainless, 302 (lb)	0.418	Strip, H.R., carbon	4.975	Tin plate, electrolytic, 0.25 lb	7.133
Tie Plates	5.125	Bars, H.R., carbon	4.873	Pipe, black, buttweld (100 ft)	14.454	Black plate, can making quality	6.233
Axles, railway	7.250	Bars, reinforcing	4.788	Pipe, galv., buttweld (100 ft)	17.731	Wire, drawn, carbon	7.713
Wheels, freight car, 33 in. (per wheel)	47.000	Bars, C.F., carbon	7.860	Pipe, line (100 ft)	141.960	Wire, drawn, stainless, 430 (lb)	0.545
Plates, carbon	4.550	Bars, C.F., alloy	11.075	Casing, oil well, carbon (100 ft)	149.516	Bale ties (bundle)	5.653
Structural Shapes	4.383	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	214.113	Nails, wire, 8d common	7.488
Bars, tool steel, carbon (lb)	0.415	Sheets, H.R., carbon	4.765	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	6.847
Bars, tool steel, alloy, oil hardening die (lb)	0.505	Sheets, C.R., carbon	5.904	Tubing, mechanical, carbon (100 ft)	‡	Woven wire fence (20-rod roll)	16.174
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.80 (lb)	1.135	Sheets, galvanized	6.945	Tubing, mechanical, stainless, 304 (100 ft)	161.193		
Bars, tool steel, H.R., alloy, high speed W 18, Cr 4, V 1 (lb)	1.730	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.000				
		Strip, C.R., carbon	7.243				

‡ Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Jan. 5 1954	Dec. 29 1953	Month Ago	Dec. Average
(1947-1949=100)	141.5	141.5	141.4	141.4

STEEL's FINISHED STEEL PRICE INDEX

	Jan. 7 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.74	189.74	189.74	181.31	151.86
Index in cents per lb	5.140	5.140	5.140	4.912	4.114

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Jan. 7 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$113.91	$113.91†	$114.64	$110.98	$97.68
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	55.04	46.69
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	46.29
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	47.41
Steelmaking Scrap, GT	23.67	30.83	33.00	43.00	42.58

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Jan. 7 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.79
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.275
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, deld., Philadelphia	4.38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	4.425	4.425	4.425	3.75-4.225	3.275
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.25
Strip, C.R., Pittsburgh	5.45	5.45	5.45	5.10-5.80	4.375
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.00
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.525	5.525	5.525	5.10-5.225	4.325
Nails, Wire, Pittsburgh	6.55	6.55	6.55	6.20-6.35	5.775
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, $\frac{7}{32}$-$\frac{9}{16}$", Pitts.	4.525	4.525	4.525	4.425	3.775

PIG IRON, Gross Ton	Jan. 7 1954	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	46.00
Basic, deld. Phila.	60.75	60.75	60.75	59.25	50.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	46.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, deld. Phila.	61.25	61.25	61.25	59.75	50.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.69
Malleable, Valley	56.50	56.50	56.50	55.00	46.50
Malleable, Chicago	56.50	56.50	56.50	55.00	46.50
Ferromanganese, Duquesne	200.00†	200.00†	200.00†	228.00*	163.00*

*78-82% Mn, per gross ton, Etna, Pa. †74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$30.50	$32.50	$33.50	$44.00	$42.75
No. 1 Heavy Melt, E. Pa.	29.50	29.50	33.00	41.50	45.25
No. 1 Heavy Melt, Chicago	29.00	30.50	32.50	42.50	39.75
No. 1 Heavy Melt, Valley	29.50	29.50	32.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	28.50	28.50	30.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	27.50	28.50	30.50	43.00	48.50
Rails, Rerolling, Chicago	39.50	42.50	46.50	52.50	64.50
No. 1 Cast, Chicago	32.50	32.50	33.50	45.00	65.50

COKE, Net Ton					
Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.50
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	24.50	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 21.50, pigs 20.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 43, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

DAILY NONFERROUS PRICE RECORD

	Price Jan. 7	Change	Previous Price	Dec. Avg.	Nov. Avg.	Jan. 1953 Avg.
Copper	29.50-30.00	Oct. 20	29.00-30.00	29.750	29.750	24.500
Lead	13.30	Sept. 16	13.80	13.300	13.300	13.925
Zinc	10.00	Sept. 11	10.50	10.000	10.000	12.500
Tin	84.50	Jan. 7	84.25	84.913	83.352	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 15	20.50	21.500	21.500	20.000
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99+%, deld.; Magnesium 99.8%, Freeport, Tex.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb deld.

Cobalt: 97-99%, $2.60 per lb for 550 lb keg, $2.62 per lb for 100 lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.50-30.00 deld. Conn Valley, 29.625-30.125 deld. Midwest; Lake 30.00 deld; Fire refined 29.75 deld.

Germanium: 99.9%, $295 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 13.30, chemical 13.40, corroding 13.40, St. Louis, New York basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8% standard ingots 27.00, 10,000 lb or more, f.o.b. Freeport, Tex. Sticks, 1.3 in. dia., 46c, 100 to 4000 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more.

Mercury: Open market, spot, New York, $187-$189 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 60.00; 25-lb pigs 62.65; "XX" nickel shot 63.65; "F" nickel shot or ingots for addition to cast iron, 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $140-$150 per troy oz. nom.

Palladium: $22-$24 per troy oz.

Platinum: $91-$93 per troy oz. from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75-$80 per troy oz.

Selenium: 99.5%, $5-$6 per lb.

Sodium: 16.50, carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $39.00 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 84.50.

Titanium: Sponge, 99.3+%, $5 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $5.35 per lb f.o.b. shipping point; less than 1000 lb $5.50; 99+% hydrogen reduced, $6.30. Treated ingots $10.43.

Zinc: Prime western 10.00, brass special 10.25, intermediate 10.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 11.35, special high grade 11.50, die casting alloy ingot 14.50, deld.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00. (Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston Alloys 19.75-20.75; No. 12 foundry alloy (No. 2 grade) 19.50-19.75; 5% silicon alloy, 0.60 Cu max., 22.00-22.50; 13 alloy, 0.60 Cu max., 22.00-22.50; 195 alloy 21.00-21.50; 108 alloy 20.00-20.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 20.75-21.25; grade 2, 19.75-20.50; grade 3, 18.75-19.25; grade 4, 17.00-17.75.

Brass Ingot: Red brass, No. 115, 24.50; tin bronze No. 225, 35.25, No. 245, 29.50; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.75; manganese bronze No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weatherproof, 100,000 lb 36.28; 30,000 lb, 36.53; l.c.l., 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $18.50 per cwt; pipe, full coils $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 100,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

ZINC

Sheets 23.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36,000 lb and over. Plates 19.00-22.25.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R. ...	86.5	67.5	92.5
Strip, C.R. ...	92.5	70.5	98.5
Plate, H.R. ..	84.5	66.5	90.5
Rod, Shapes ..	82.5	65.5	88.5
Seamless Tubes	115.5	100.5	137.5
Shot, Blocks ..	....	60.0	....

ALUMINUM

(30,000 lb base; freight allowed over 499 lb)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Inc.	Flat Sheet*	Coiled Sheet	Coiled Sheet Circle†
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.008	12-18	50.2	46.0	59.1

* 72-180 in. lengths. † 26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. widths or dia., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* 24-48 in. widths or dia., 72-180 in. lengths.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or across flats	Round 11S-T3	Round 17S-T4	Hexagonal 11S-T3	Hexagonal 17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.9	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 42.05-32.75, in specific lengths 36-144 in., diameters 0.375-8 in.; rectangles and squares, Class 1, 49.2 to 37.6 in random lengths 0.375-4.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft length, plain ends, 90,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
⅜	$15.05	2	$ 46.30
1	23.65	4	127.70
1¼	32.00	6	228.50
1½	38.25	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00, 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 83.00, 20,000 lb or more 0.188-1.0 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 69.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ¼-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38b	45.98c	....	48.44	26.000	26.000	25.250
Yellow Brass	41.72	41.66	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	45.44	45.38	45.98	48.25	23.000	22.750	22.250
Low Brass, 80%	44.47	44.41	45.01	47.28	22.125	21.875	21.375
Naval Brass	45.76	40.07	52.80	48.92	18.250	18.000	17.500
Commercial Bronze, 90% ...	46.95	46.89	47.49	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.36	59.43g	57.69	....	23.625	23.375	11.813
Phosphor Bronze, A, 5%	66.58	67.08	67.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.75	70.11e	25.125	24.875	24.125
Manganese Bronze	49.48	43.62	54.06	....	18.250	18.000	17.500
Muntz Metal	43.98	39.77	....	....	18.625	18.375	17.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 2S clipping 12.00; low copper clippings 12.00; mixed clippings 10.00; old sheet 9.00; borings and turnings 6.00; pistons and struts 6.00; crankcases 9.00; industrial castings 9.00.

Copper and Brass: Heavy copper and wire, No. 1 23.00-23.50; No. 2 copper 21.00-21.50; light copper 19.00-19.50; No. 1 composition red brass 17.00; No. 1 composition turnings 16.50; mixed brass turnings 10.50; new brass clippings 17.00-17.50; No. 1 brass rod turnings 13.00-12.50; light brass 10.00; heavy yellow brass 12.50-13.00; new brass rod ends 14.50; auto radiators, unsweated, 12.50; cocks and faucets 14.50-15.00; brass pipe 16.00.

Lead: Heavy 10.50; battery plate 5.50-5.75; linotype and stereotype 12.50; electrotype 11.00; mixed babbitt 12.00-12.50.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Monel: Clippings 22.00-24.00; old sheet 20.00-22.00; turnings 14.00-16.00; rods 22.00-24.00.

Nickel: Sheets and clips 60.00-65.00; rolled anodes 60.00-65.00; turnings 40.00; rod ends 60.00-65.00.

Tin: No. 1 pewter 40.00-45.00; block tin pipe 65.00-67.00; No. 1 babbitt 37.00-38.00.

Zinc: Old zinc, 3.50; new die cast scrap, 3.50; old die cast scrap, 3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 2S, 3S clippings 14.00-14.50; 51S, 52S clippings 14.00-14.50; 14S, 17S, 24S clippings 13.00-13.50; mixed clippings 12.75-13.50; old sheet 11.00-11.50; old cast 11.00-11.50; clean old cable, free of steel, 14.00-14.50; borings and turnings 11.50-12.00.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 24.00-24.50; No. 2 copper 22.50; light copper 21.00; refinery brass (60% copper) per dry copper content 19.50; auto radiators, nominal.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 23.50-24.00; No. 2 copper 22.00-22.50; light copper 20.50-21.00; No. 1 composition borings 17.50-18.00; No. 1 composition solids 18.00-18.50; heavy yellow brass solids 13.75-14.25; yellow brass turnings 13.50; radiators 14.25.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 45.04, oval 44.54, 2000-5000 lb; electrodeposited 39.78, cast 42.04, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.035; 200-499 lb $1.02; 500-999 lb $1.015; 1000 lb or more $1.01.

Zinc: Bar 18.50, bar or flat top 17.50, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00; over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.50; 2500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80; granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 67.2; 100-500 lb 53.2; 700-1900 lb 50.7; 2000-9900 lb 49; 10,000 lb or more 47.8.

Stannous Chloride (Anhydrous): Less than 50 lb $1.521; 50 lb $1.181; 100-300 lb $1.031; 400-900 lb $1.007; 100-1900 lb 98.2; 2000-4900 lb 94.6; 5000-19,000 lb 88.5; 20,000 lb and over 82.4.

Stannous Sulphate: Less than 50 lb $1.223; 50 lb 92.3; 100-1900 lb 90.3; 2000 lb and over 88.3.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

Nonferrous Metals

The new year gets off to a slow start in the nonferrous metal markets, yet trade experts expect the first quarter to be better than the last quarter of 1953

LIMPING into the new year at the same halting pace of 1953's closing weeks, metal markets have not yet responded to the stimulus of optimistic economic forecasts.

The upturn may take much of January to develop, in the opinion of several trade experts. They expect to see a first quarter well above the relatively poor final three months of last year.

Still Waiting—A greater sense of price consciousness in buyers largely accounts for the humdrum activity. It has grown in importance as industry's worries about allocation, use controls, supply sources and labor shortages languished.

Spirited buying is conspicuously absent in copper and its alloys. Everyone is waiting for the price to topple. Until it does, no wave of volume buying can be expected. The break came a bit closer last week as Chile agreed to market copper at price prevailing on date of shipment rather than a flat 30 cents. A year-end strike was averted by granting of wage increases of approximately 33 per cent to Chilean miners.

Zinc sales in all grades are extremely light, with even special high grade demand off somewhat. Lead is more active, with buyers divided over placing orders at average price or a flat 13.50 cents. Expected pick-up in orders for aluminum didn't develop with the calendar change, but volume isn't off much. Scrap markets, even export, show slack.

Prognostications—Company business forecasts are gaining in popularity; this year there was a veritable blizzard. Here's a paraphrased summary of several predictions of things to come:

Donald M. White, the Aluminum Association: Primary aluminum production for 1953 is estimated at 1.25 million tons, about 33 per cent over 1952. Annual primary capacity at year end stood at approximately 1.42 million tons, including about 79,000 tons of stand-by capacity using high-cost power. Shipments of wrought products in 1953 are estimated at 1.16 million tons, 20 per cent over 1952. Castings shipments totaled 325,000 tons, up 25 per cent.

Richard S. Reynolds Jr., Reynolds Metals Co.: With favorable supply and price conditions prevailing and no government limitations on civilian uses, the aluminum industry looks to 1954 as an opportunity for unhampered selling and market development.

I. W. Wilson, Aluminum Co. of America: Alcoa's primary production in 1953 totaled approximately 600,000 tons, about 30 per cent more than in 1952. Company's expansion program, which began in 1950, is nearly complete. It required expenditures of $350 million and concurrent other capital expenditures of $100 million.

Nathanael V. Davis, Aluminium Ltd.: Production of ingot aluminum by Aluminum Co. of Canada increased about 8 per cent over 1952 to about 539,000 tons. Total deliveries in the U. S. were increased to over 260,000 tons, more than double those of 1952.

John F. Thompson, International Nickel Co. of Canada Ltd.: Over 65 per cent of 1953 free world output (170,000 tons) went to the U. S. for defense and civilian purposes. Company's annual rate of nickel production at beginning of 1954 is approximately 137,500 tons; deliveries of 1000 tons monthly under a DMPA contract will start this month.

J. M. Kennedy, Revere Copper & Brass Inc.: Copper and copper alloy mill product in 1953 provided largest share of company sales volume. Revere has an increasingly important stake in the aluminum industry. Much of the company's expansion plans have centered and will continue to center around this metal. New products—such as air conditioners, new types of household appliances, heat pumps, and new electrical starting systems and electrical power steering for the automotive industry—are expected to help compensate for possible lower volume in some consumer durable lines.

Herbert Barchoff, Eastern Brass & Copper Co.: Copper and brass industry suffered a 40 per cent decline in the last quarter of 1953. Five factors brought about this "weakened state of the industry:" Cutbacks and stretch-outs in military production program, decline of production in the hard goods field, substitution of steel and aluminum in many commodities since these two metals are now more plentiful, fear of a price decline, and importation of competing foreign metals at substantially lower prices.

STEEL's Metal Price Averages for Dec., 1953

(Cents per pound)

Electrolytic Copper, del. Conn.	29.750
Lead, St. Louis	13.300
Prime Western Zinc, E. St. Louis	10.000
Straits Tin, New York	84.913
Primary Aluminum Ingots, del.	21.500
Magnesium	27.000
Nickel, f.o.b. refinery	60.000

A Change for Magnesium

Two new basing points for primary magnesium have been set up by Dow Chemical Co. They are Port Newark, N. J., and Madison, Ill. The company is in effect balancing freight by adding it to selling price. Price of 42-pound pig, for example, is now 28.2 cents from these points. On deliveries within 100 miles or so of these points, users will save about one-half cent a pound in freight costs. Customers outside the area can get quicker delivery from these points, though cost will be higher than f.o.b. Freeport, Tex.

Several base prices were increased, effective Jan. 1. Up 0.75 cent to 25.77 cents a pound is 20-pound, 4-piece notched primary ingot. Twelve-pound ingot is up 1 cent to 29.5 cents, and base price of primary sticks and turnings has been increased 1 cent per pound.

Nonferrous Briefs

- Selenium price jumped last week to $5 a pound, up from a $4.25-$4.75 range.
- Nearly three years after it was born, the International Materials Conference was formally dissolved and faded into history with the old year.
- Brush Beryllium Co., Cleveland, is selling its wares in commercial markets for the first time in four years. Its output had been tied up with an AEC contract for that period.

You know he'll never lose you . . .

YOUR GUIDE . . . you *know* he'll take you where you want to go, by the quickest, easiest route. That's exactly what Bristol Brass aims to do . . . to get your order to you the same way. And that takes experience and *character* . . . both in the company and in its product.

Matter of fact, that's why so many people keep standing orders with Bristol Brass . . . because they know those orders will never get lost. They'll be where they're supposed to be, right on time, and *right* according to specifications . . . be it sheet, rod or wire.

. . .

The BRISTOL BRASS CORPORATION, makers of Brass since 1850 in Bristol, Conn. Offices or warehouses in Boston, Chicago, Cleveland, Dayton, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Providence, Rochester.

"Bristol-Fashion" means **Brass at its Best**

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on page 111. Key to footnotes, page 113.

—SEMIFINISHED—

INGOTS, Carbon Forging (NT)
Fontana,Calif. K1 ....$86.00
Munhall,Pa. U5 .....59.00

INGOTS, Alloy (NT)
Detroit R7 .....$63.00
Fontana,Calif. K1 .....88.00
Midland,Pa. C18 .....62.00
Munhall,Pa. U5 .....62.00

BILLETS, BLOOMS & SLABS Carbon Rerolling (NT)
Aliquippa,Pa. J5 ....$62.00
Bessemer,Pa. U5 .....62.00
Clairton,Pa. U5 .....62.00
Ensley,Ala. T2 .....62.00
Fairfield,Ala. T2 .....62.00
Fontana,Calif. K1 .....70.00
Gary,Ind. U5 .....62.00
Johnstown,Pa. B2 .....62.00
Lackawanna,N.Y. B2 .62.00
Munhall,Pa. U5 .....62.00
So.Chicago,Ill. U5 ...62.00
So.Duquesne,Pa. U5 ..62.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$75.50
Bessemer,Pa. U5 .....75.50
Buffalo R2 .....75.50
Canton,O. R2 .....75.50
Clairton,Pa. U5 .....75.50
Cleveland R2 .....75.50
Conshohocken,Pa. A3 ..82.50
Detroit R7 .....78.50
Ensley,Ala. T2 .....75.50
Fairfield,Ala. T2 .....75.50
Fontana,Calif. K1 ....83.50
Gary,Ind. U5 .....75.50
Geneva,Utah C11 .....75.50
Houston S5 .....83.50
Johnstown,Pa. B2 .....75.50
Lackawanna,N.Y. B2 ..75.50
LosAngeles B3 .....94.50
Munhall,Pa. U5 .....75.50
Seattle B3 .....94.50
So.Chicago R2, U5, W14 75.50
So.Duquesne,Pa. U5 ..75.50
So.SanFrancisco B3 ..94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$82.00
Buffalo R2 .....82.00
Canton,O. R2, T7 .....82.00
Conshohocken,Pa. A3 ..89.00
Detroit R7 .....84.00
Fontana,Calif. K1 ....101.00
Gary,Ind. U5 .....82.00
Houston S5 .....90.00
Ind.Harbor,Ind. Y1 ....82.00
Johnstown,Pa. B2 .....82.00
Lackawanna,N.Y. B2 ..82.00
LosAngeles B3 .....102.00
Massillon,O. R2 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
So.Chicago R2, U5, W14 82.00
So.Duquesne,Pa. U5 ..82.00
Struthers,O. Y1 .....82.00
Warren,O. C17 .....82.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$92.50
Canton,O. R2 .....92.50
Cleveland R2 .....92.50
Fontana,Calif. K1 ...113.50
Gary,Ind. U5 .....92.50
Massillon,O. R2 .....92.50
So.Chicago,Ill. R2 ...92.50
So.Duquesne,Pa. U5 ..92.50

SHEET BAR (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 .....3.85
Munhall,Pa. U5 .....3.75
Warren,O. R2 .....3.75
Youngstown R2, U5 ...3.75

WIRE RODS
AlabamaCity,Ala. R2 ..4.525
Aliquippa,Pa. J5 .....4.525
Alton,Ill. L1 .....4.70
Buffalo W12 .....4.525
Cleveland A7 .....4.525
Donora,Pa. A7 .....4.525
Fairfield,Ala. T2 .....4.525
Fontana,Calif. K1 ....5.325
Houston S5 .....4.925
Johnstown,Pa. B2 .....4.525
Joliet,Ill. A7 .....4.525
KansasCity,Mo. S5 ....4.865
LosAngeles B3 .....5.325
Minnequa,Colo. C10 ...4.775
Monessen,Pa. P7 .....4.725
No.Tonawanda,N.Y. B11 4.525
Pittsburg,Calif. C11 ...5.175
Portsmouth P12 .....4.525
Roebling,N.J. R5 .....4.625
So.Chicago,Ill. R2 ....4.525
SparrowsPoint,Md. B2..4.625
Sterling,Ill.(1) N15 ...4.525
Struthers,O. Y1 .....4.525
Torrance,Calif. C11 ...5.325
Worcester,Mass. A7 ...4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 .....4.10
Bessemer,Ala. T2 .....4.10
Bethlehem,Pa. B2 .....4.15
Clairton,Pa. U5 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 .....4.75
Gary,Ind. U5 .....4.10
Geneva,Utah C11 .....4.10
Houston S5 .....4.50
Ind.Harbor,Ind. I-2 ....4.10
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 .....4.70
Lackawanna,N.Y. B2 ...4.15
LosAngeles B3 .....4.80
Minnequa,Colo. C10 ....4.55
Munhall Pa. U5 .....4.10
Niles,Calif. P1 .....4.80
Phoenixville,Pa. P4 ....4.15
Seattle B3 .....4.85
So.Chicago,Ill. U5, W14 4.10
So.SanFrancisco B3 ....4.75
Torrance,Calif. C11 ....4.80
Weirton,W.Va. W6 ....4.35

Wide Flange
Bethlehem,Pa. B2 .....4.15
Clairton,Pa. U5 .....4.10
Fontana,Calif. K1 .....5.30
Lackawanna,N.Y. B2 ...4.15
Munhall,Pa. U5 .....4.10
Phoenixville,Pa. P4 ....4.95
So.Chicago,Ill. U5 ....4.10

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 .....6.40
Gary,Ind. U5 .....5.00
Munhall,Pa. U5 .....5.00
So.Chicago,Ill. U5 ....5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.175
Bessemer,Ala. T2 .....6.175
Bethlehem,Pa. B2 .....6.20
Clairton,Pa. U5 .....6.175
Fairfield,Ala. T2 .....6.175
Fontana,Calif. K1 .....6.825
Gary,Ind. U5 .....6.175
Geneva,Utah C11 .....6.175
Ind.Harbor,Ind. I-2 ...6.175
Ind.Harbor,Ind. Y1 ..6.675
Johnstown,Pa. B2 .....6.20
Lackawanna,N.Y. B2 ...6.20
LosAngeles B3 .....6.85
Munhall,Pa. U5 .....6.175
Seattle B3 .....6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 ....6.80
Struthers,O. Y1 .....6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....6.20
Lackawanna,N.Y. B2 ...6.20
Munhall,Pa. U5 .....6.125
So.Chicago,Ill. U5 ....6.125

BEARING PILES
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 ....4.10

—PILING—

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ...4.925
Lackawanna,N.Y. B2 ...4.925
Munhall,Pa. U5 .....4.925
So.Chicago,Ill. U5 ....4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ...4.10
Aliquippa,Pa. J5 .....4.10
Ashland,Ky. (15) A10 ..4.10
Bessemer,Ala. T2 .....4.10
Clairton,Pa. U5 .....4.10
Claymont,Del. C22 .....4.20
Cleveland J5, R2 .....4.10
Coatesville,Pa. L7 .....4.20
Conshohocken,Pa. A3 ...4.25
Ecorse,Mich. G5 .....4.30
Fairfield,Ala. T2 .....4.10
Fontana,Calif.(30) K1 ..4.75
Gary,Ind. U5 .....4.10
Geneva,Utah C11 .....4.10
GraniteCity,Ill. G4 ....4.30
Harrisburg,Pa. C5 .....4.10
Houston S5 .....4.50
Ind.Harbor,Ind. I-2, Y1.4.10
Johnstown,Pa. B2 .....4.10
Lackawanna,N.Y. B2 ...4.10
Minnequa,Colo. C10 ....4.95
Munhall,Pa. U5 .....4.10
Riverdale,Ill. A1 .....4.10
Pittsburgh J5 .....4.10
Seattle B3 .....5.00
Sharon,Pa. S3 .....4.10
So.Chicago,Ill. U5, W14 4.10
SparrowsPoint,Md. B2 ..4.10
Steubenville,O. W10 ....4.10
Warren,O. R2 .....4.10
Weirton,W.Va. W6 ....4.10
Youngstown R2, U5, Y1.4.10

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 ....5.90
Geneva,Utah C11 .....5.25

PLATES, Wrought Iron
Economy,Pa. B14 .....9.30

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.25
Bessemer,Ala. T2 .....6.25
Clairton,Pa. U5 .....6.25
Cleveland J5 .....6.25
Conshohocken,Pa. A3 ..6.25
Ecorse,Mich. G5 .....6.45
Fairfield,Ala. T2 .....6.25
Fontana,Calif. (30) K1..6.95
Gary,Ind. U5 .....6.25
Geneva,Utah C11 .....6.25
Ind.Harbor,Ind. I-2 ....6.25
Ind.Harbor,Ind. Y1 ....6.75
Johnstown,Pa. B2 .....6.25
Lackawanna,N.Y. B2 ...6.25
Munhall,Pa. U5 .....6.25
Pittsburgh J5 .....6.25
Seattle B3 .....7.15
Sharon,Pa. S3 .....6.25
So.Chicago,Ill. U5, W14 6.25
SparrowsPoint,Md. B2 ..6.25
Youngstown U5 .....6.25
Youngstown Y1 .....6.75

PLATES, Alloy
Claymont,Del. C22 .....5.55
Coatesville,Pa. L7 .....5.55
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.55
Johnstown,Pa. B2 .....5.55
Munhall,Pa. U5 .....5.55
Sharon,Pa. S3 .....5.55
So.Chicago,Ill. U5, W14 5.55
SparrowsPoint,Md. B2 ..5.55

FLOOR PLATES
Cleveland J5 .....5.15
Conshohocken,Pa. A3 ..5.15
Harrisburg,Pa. C5 .....5.15
Ind.Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 .....5.15
So.Chicago,Ill. U5 ....5.15

PLATES, Ingot Iron
Ashland c.l. (15) A10 ..4.35
Ashland,l.c.l.(15) A10 ..4.85
Cleveland, c.l. R2 .....4.70
Warren,O. c.l. R2 .....4.70

—BARS—

BARS, Hot-Rolled Carbon
Aliquippa,Pa. J5 .....4.15
Alton,Ill. L1 .....4.35
Atlanta,Ga. A11 .....4.40
Bessemer,Ala. T2 .....4.15
Buffalo(31) R2 .....4.18
Clairton,Pa. U5 .....4.15
Cleveland(31) R2 .....4.21
Detroit R7 .....4.30
Ecorse,Mich. G5 .....4.35
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.15
Fairless,Pa. U5 .....4.30
Fontana,Calif. K1 .....4.85
Gary,Ind. U5 .....4.15
Gadsden,Ala.(31) R2 ...4.18
Houston S5 .....4.55
Ind.Harbor,Ind. I-2, Y1.4.15
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 .....4.75
Lackawanna,N.Y. B2 ...4.15
LosAngeles B3 .....4.85
Milton,Pa. M18 .....4.15
Minnequa,Colo. C10 ....4.60
Niles,Calif. P1 .....4.85
N.Tonawanda,N.Y. B11 .4.15
Pittsburg,Calif. C11 ...4.85
Pittsburgh J5 .....4.15
Portland,Oreg. O4 .....4.90
Seattle B3, N14 .....4.90
So.Chicago U5, W14 ....4.15
Chicago(31) R2 .....4.22
So.Duquesne,Pa. U5 ....4.15
So.SanFran.,Calif. B3 ..4.90
Sterling,Ill.(1) N15 ....4.15
Struthers,O. Y1 .....4.15
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 .....4.15
Youngstown U5 .....4.15
Youngstown(31) R2 .....4.20

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.875
Buffalo R2 .....4.875
Canton,O. R2, T7 .....4.875
Clairton,Pa. U5 .....4.875
Detroit R7 .....4.975
Ecorse,Mich. G5 .....5.075
Fairless,Pa. U5 .....5.025
Fontana,Calif. K1 .....5.925
Gary,Ind. U5 .....4.875
Houston S5 .....5.275
Ind.Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 .....4.875
KansasCity,Mo. S5 ...5.475
Lackawanna,N.Y. B2..4.875
LosAngeles B3 .....5.925
Massillon,O. R2 .....4.875
Midland,Pa. C18 .....4.875
So.Chicago R2, U5,W14 4.875
So.Duquesne,Pa. U5 ..4.875
Struthers,O. Y1 .....4.875
Warren,O. C17 .....4.875
Youngstown U5 .....4.875

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.225
Bessemer,Ala. T2 .....6.225
Bethlehem,Pa. B2 .....6.225
Clairton,Pa. U5 .....6.225
Ecorse,Mich. G5 .....6.425
Fairfield,Ala. T2 .....6.225
Fontana,Calif. K1 .....7.475
Gary,Ind. U5 .....6.225
Ind.Harb.,Ind. Y1 .....6.725
Ind.Harb.,Ind. I-2 ....6.225
Johnstown,Pa. B2 .....6.225
Lackawanna,N.Y. B2 ...6.225
LosAngeles B3 .....6.925
Pittsburgh J5 .....6.225
Seattle B3 .....6.975
So.Chicago W14 .....6.225
So.Duquesne,Pa. U5 ..6.225
So.SanFrancisco B3 ..6.975
Struthers,O. Y1 .....6.725
Youngstown U5 .....6.225

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ....4.35

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.15
Atlanta A11 .....4.40
Niles,Calif. P1 .....4.85
SanFrancisco S7 .....5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 .....6.00
Gary,Ind. U5 .....5.00
Houston S5 .....5.60
KansasCity S5 .....5.60
Youngstown U5 .....5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 .....5.25
Camden,N.J. P13 .....5.65
Carnegie,Pa. C12 .....5.20
Chicago W18 .....5.20
Cleveland A7, C20 .....5.20
Detroit P17, R7 .....5.35
Detroit B5 .....5.40
Donora,Pa. A7 .....5.20
Elyria,O. W8 .....5.20
Franklin Park,Ill. N5 ..5.20
Gary,Ind. R2 .....5.20
GreenBay,Wis. F7 .....5.20
Hammond,Ind. L2, M13 5.20
Hartford,Conn. R2 .....5.75
Harvey,Ill. B5 .....5.20
LosAngeles R2 .....6.65
Mansfield,Mass. B5 ....5.75
Massillon,O. R2, R8 ...5.20
Monaca,Pa. S17 .....5.20
Newark,N.J. W18 .....5.65
NewCastle,Pa. (17) B4 .5.20
Pittsburgh J5 .....5.20
Plymouth,Mich. P5 ....5.45
Putnam,Conn. W18 .....5.75
Readville,Mass. C14 ....5.75
St.Louis,Mo. M5 .....5.50
So.Chicago,Ill. W14 ....5.20
SpringCity,Pa. K3 .....5.65
Struthers,O. Y1 .....5.20
Waukegan,Ill. A7 .....5.20
Worcester,Mass. W19 ...6.10
Youngstown F3, Y1 .....5.20

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. (5) C19 4.45

BARS, Cold-Finishing Alloy
Ambridge,Pa. W18 ....6.325
BeaverFalls,Pa. M12 ...6.325
Bethlehem,Pa. B2 .....6.325
Buffalo B5 .....6.325
Camden,N.J. P13 .....6.50
Canton,O. R2, T7 .....6.325
Carnegie,Pa. C12 .....6.325
Chicago W18 .....6.325
Cleveland A7, C20 .....6.325
Detroit R7 .....6.425
Detroit P17 .....6.475
Detroit B5 .....6.525
Donora,Pa. A7 .....6.325
Elyria,O. W8 .....6.325
Gary,Ind. R2 .....6.325
Hammond,Ind. L2, M13 6.325
Hartford,Conn. R2 .....6.775
Harvey,Ill. B5 .....6.325
Lackawanna,N.Y. B2 ...6.325
Mansfield,Mass. B5 ...6.775
Massillon,O. R2, R8 ...6.325
Midland,Pa. C18 .....6.325
Monaca,Pa. S17 .....6.325
Newark,N.J. W18 .....6.65
Plymouth,Mich. P5 ....6.525
SpringCity,Pa. K3 .....6.50
Struthers,O. Y1 .....6.325
Warren,O. C17 .....6.325
Waukegan,Ill. A7 .....6.325
Worcester,Mass. A7 ...6.625
Youngstown F3, Y1 ...6.325

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..4.15
Atlanta A11 .....4.40
Buffalo R2 .....4.15
Cleveland R2 .....4.15
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.15
Fairless,Pa. U5 .....4.30
Fontana,Calif. K1 .....4.85
Gary,Ind. U5 .....4.15
Houston S5 .....4.55
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 ....4.75
Lackawanna,N.Y. B2 ...4.15
LosAngeles B3 .....4.85
Milton,Pa. M18 .....4.15
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 .....4.15
SandSprings,Okla. S5 ..5.00
Seattle B3, N14 .....4.90
So.Chicago,Ill. R2 .....4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFrancisco B3 ....4.90
SparrowsPoint,Md. B2 ..4.15
Sterling,Ill. (1) N15 ...4.15
Struthers,O. Y1 .....4.15
Torrance,Calif. C11 ....4.85
Youngstown R2, U5 ....4.15

BARS, Reinforcing (Fabricated; to consumers)
Johnstown, ¼-1" B2 ..5.55
KansasCity S5 .....6.35
LosAngeles B3 .....5.80
Marion,O. P11 .....5.55
Seattle N14 .....5.80
Seattle B3 .....5.85
So.SanFrancisco B3 ....5.85
SparrowsPt, ¼-1" B2..5.55
Williamsport,Pa. S19 ..5.45

RAIL STEEL BARS
Avis,Pa.(4) J8 .....4.25
ChicagoHts.(3,4) C2 ....4.15
ChicagoHts.(3,4) I-2 ..4.15
FortWorth,Tex.(26) T4 .4.65
Franklin,Pa.(3,4) F5 ..4.15
Marion,O.(3) P11 .....4.25
Moline,Ill.(3) R2 .....4.25
Tonawanda(3,4) B12 ..5.00
Williamsport,Pa.(3) S19.4.50
Williamsport,Pa.(4) S19.5.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.40
Economy,Pa.(D.R.)B14 12.90
Economy(Staybolt) B14 13.20
Mc.K.Rks.(S.R.) L5 ..10.40
Mc.K.Rks.(D.R.) L5 ..14.00
McK.Rks.(Staybolt) L5 15.50

—SHEETS—

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 ..3.925
Allenport,Pa. P7 .....3.925
Ashland,Ky.(8) A10 ..3.925
Butler,Pa. A10 .....3.925
Cleveland J5, R2 .....3.925
Conshohocken,Pa. A3 ..4.05
Detroit M1 .....4.15
Ecorse,Mich. G5 .....4.125
Fairfield,Ala. T2 .....3.925
Fairless,Pa. U5 .....4.025
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 .....3.925
Geneva,Utah C11 .....4.025
GraniteCity,Ill. G4 ....4.125
Ind.Harbor,Ind. I-2, Y1 3.925
Irvin,Pa. U5 .....3.925
Kokomo,Ind C16 .....4.025
Lackawanna,N.Y. B2 ..3.925

Munhall,Pa. U5 .....3.925
Newport,Ky N9 .....3.925
Niles,O. N12 .....5.175
Pittsburg,Calif. C11 ..4.625
Pittsburgh J5 .....3.925
Portsmouth,O. P12 ....3.925
Riverdale,Ill. A1 .....3.925
Sharon,Pa. S3 .....3.925
So.Chicago,Ill. W14 ...3.925
SparrowsPoint,Md. B2..3.925
Steubenville,O. W10 ..3.925
Torrance,Calif. C11 ...4.625
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ....3.925
Youngstown U5, Y1 ..3.925

SHEETS, H.R. (19 gage)
AlabamaCity, Ala. R2..5.225
Dover,O. R1 .....5.05
Kokomo,Ind. C16 .....5.025
Mansfield,O. E6 .....5.05
Niles,O. N12 .....4.775
Torrance,Calif. C11 ...5.875

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy
Cleveland J5, R2 .....5.90
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 .....6.10
Fairfield,Ala. T2 .....5.90
Fontana,Calif. K1 ....6.675
Gary,Ind. U5 .....5.90
Ind.Harbor,Ind. I-2 ....5.90
Ind.Harbor,Ind. Y1 ....6.40
Irvin,Pa. U5 .....5.90
Lackawanna(35) B2 ...5.90
Munhall,Pa. U5 .....5.90
Pittsburgh J5 .....5.90
Sharon,Pa. S3 .....5.90
So. Chicago,Ill. U5 .....5.90
SparrowsPoint(36) B2..5.90
Warren,O. R2 .....5.90
Weirton,W.Va. W6 .....5.90
Youngstown U5 .....5.90
Youngstown Y1 .....6.40

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)
Ashland,Ky.(8) A10 ..4.175
Cleveland R2 .....4.525
Ind.Harbor,Ind. I-2 ...4.175
Warren,O. R2 .....4.525

SHEETS, Cold-Rolled Steel (Commercial Quality)
Allenport,Pa. P7 .....4.775
Cleveland J5, R2 .....4.775
Ecorse,Mich. G5 .....4.975
Fairfield,Ala. T2 .....4.775
Fairless,Pa. U5 .....4.875
Follansbee,W.Va. F4 ..4.775
Fontana,Calif. K1 ....5.875
Gary,Ind. U5 .....4.775
GraniteCity,Ill. G4 ....4.975
Ind.Harbor,Ind. I-2,Y1 4.775
Irvin,Pa. U5 .....4.775
Lackawanna,N.Y. B2 ..4.775
Middletown,O. A10 ....4.775
Pittsburg,Calif. C11 ..5.725
Pittsburgh J5 .....4.775
Portsmouth,O. P12 ....4.775
SparrowsPoint,Md. B2.4.775
Steubenville,O. W10 ...4.775
Warren,O. R2 .....4.775
Weirton,W.Va. W6 ...4.775
Youngstown Y1 .....4.775

SHEETS, Cold-Rolled High-Strength Low Alloy
Cleveland J5, R2 .....7.225
Ecorse,Mich. G5 .....7.425
Fontana,Calif. K1 .....8.275
Gary,Ind. U5 .....7.225
IndianaHarbor,Ind. Y1.7.725
Irvin,Pa. U5 .....7.225
Lackawanna(37) B2 ..7.225
Pittsburgh J5 .....7.225
SparrowsPoint (38) B2 7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.225
Youngstown Y1 .....7.725

SHEETS, Cold-Rolled Ingot Iron
Cleveland R2 .....5.375
Middletown,O. A10 ....5.275
Warren,O. R2 .....5.375

SHEETS, Gal'd No. 10 Steel
AlabamaCity,Ala. R2..5.275
Ashland,Ky. (8) A10 ..5.275
Canton,O. R2 .....5.275
Delphos,O. N16 .....5.775
Dover,O. R1 .....5.275
Fairfield,Ala. T2 ....5.275†
Gary,Ind. U5 .....5.275†
GraniteCity,Ill. G4 ....5.475
Ind.Harbor,Ind. I-2 ...5.325
Irvin,Pa. U5 .....5.275†
Kokomo,Ind. C16 ....5.375†
MartinsFerry,O. W10..5.275
Niles,O. N12 .....5.275
Pittsburg,Calif. C11 ..6.025†
SparrowsPoint, Md. B2.5.275
Steubenville,O. W10 ..5.275
Torrance,Calif. C11 ..6.275†
Weirton,W.Va. W6 ....5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10 High-Strength Low-Alloy
Irvin,Pa. U5 .....7.925
SparrowsPoint(39) B2 .8.075

SHEETS, Galvanized Ingot Iron No. 10 flat
Ashland,Ky.(8) A10 ..5.525
Canton,O. R2 .....6.025

SHEETS, Culvert	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.325	....
Canton,O. R2	....6.475	6.925
Fairfield T2	....6.075	6.325
Gary,Ind. U5	....6.075	6.325
Ind.Harbor I-2	..6.075	6.325
Irvin,Pa. U5	....6.075	6.325
Kokomo,Ind. C16	6.175	....
MartinsFry.,O.W10	6.075	....
Pitts.,Cal. C11	..6.825	....
SparrowsPt. B2	.6.075	....
Torrance,Cal. C11	7.075	....

SHEETS, Culvert	Pure Iron
Ashland,Ky A10	.....6.575
Fairfield, Ala. T2	.....6.325
MartinsFerry,O. W10	..6.325

SHEETS, Galvanneale Steel
Canton,O. R2 .....5.825
Irvin,Pa. U5 .....5.825†
Kokomo,Ind. C16 ....5.925†
Niles,O. N12 .....5.825

†Based on 5c zinc

SHEETS, ZINCGRIP Steel
Butler,Pa. A10 .....5.525
Middletown,O. A10 ....5.525

SHEETS, ZINCGRIP Ingot Iron
Butler,Pa. A10 .....5.775
Middletown,O. A10 ....5.775

SHEETS, Electrogalvanized
Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 ....5.975

SHEETS, ALUMINIZED
Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron
Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.175
Gary,Ind. U5 .....5.175
GraniteCity,Ill. G4 ...5.875
Ind. Harbor,Ind. I-2 ...5.175
Irvin,Pa. U5 .....5.175
Middletown,O. A10 ....5.175
Niles,O. N12 .....6.525
Youngstown Y1 .....5.175

BLUED STOCK, 29 ga
Follansbee,W.Va. F4 ..7.30
Follansbee (23) F4 ...7.175
Yorkville,O. W10 .....7.20

SHEETS, Long Terne Steel (Commercial Quality)
BeechBott'm,W.Va.W10 5.675
Gary,Ind., U5 .....5.675
Mansfield,O. E6 .....5.675
Middletown,O. A10 ....5.675
Niles,O. N12 .....5.675
Weirton,W.Va. W6 ...5.675

SHEETS, Long Terne, Ingot Iron
Middletown,O. A10 ....6.075

SHEETS, Well Casing
Fontana,Calif. K1 ....6.20

—STRIP—

STRIP, Hot-Rolled Carbon
Ala.City,Ala.(27) R2 .3.925
Allenport,Pa. P7 .....3.925
Alton,Ill. L1 .....4.10
Ashland,Ky.(8) A10 ..3.925
Atlanta A11 .....4.175
Bessemer,Ala. T2 ....3.925
Bridgeport,Conn.(10)S15 4.15
Buffalo (27) R2 .....3.925
Carnegie,Pa. S18 ....4.425
Conshohocken,Pa. A3 ..4.05
Detroit M1 .....4.15
Ecorse,Mich. G5 .....4.125
Fairfield,Ala. T2 .....3.925
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 .....3.925
Houston Tex. S5 .....4.325
Ind.Harbor,Ind. I-2,Y1 3.925
Johnstown,Pa.(25) B2 .3.925
KansasCity,Mo.(9) S5..4.525
Lackw'na,N.Y.(25) B2.3.925
LosAngeles(25) B3 ....4.675
Milton,Pa. M18 .....3.925
Minnequa,Colo. C10 ..5.025
NewBritain(10) S15 ....4.15
N.Tonawanda,N.Y.B11 3.925
Pittsburg,Calif. C11 ..4.675
Portsmouth,O. P12 ...3.925
Riverdale,Ill. A1 .....3.925
SanFrancisco S7 .....5.10
Seattle(25) B3 .....4.925
Seattle N14 .....4.925
Sharon,Pa. S3 .....3.925
So.Chicago,Ill. W14 ...3.925
So.SanFrancisco(25)B3 4.675
SparrowsPoint,Md. B2.3.925
Torrance,Calif. C11 ...4.675
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ....3.925
Youngstown U5 .....3.925

STRIP, Hot-Rolled Alloy
Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.40
Fontana,Calif. K1 .....7.80
Gary,Ind. U5 .....6.40
Houston,Tex. S5 .....6.80
KansasCity, Mo. S5 ....7.00
LosAngeles B3 .....7.60
NewBritn.,Conn.(10)S15 6.45
Sharon,Pa. S3 .....6.40
So.Chicago W14 .....6.40
Youngstown U5 .....6.40

STRIP, Hot-Rolled High-Strength Low-Alloy
Bessemer,Ala. T2 .....5.95
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....5.95
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Lackawanna,N.Y. B2 ..6.00
LosAngeles(25) B3 ....6.70
Seattle(25) B3 .....6.95
Sharon,Pa. S3 .....5.95
So.SanFrancisco(25) B3.6.70
SparrowsPoint,Md. B2 ..6.00
Warren,O. R2 .....5.95
Weirton,W.Va. W6 ....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

STRIP, Hot-Rolled Ingot Iron
Ashland,Ky.(8) A10 ..4.175
Warren,O. R2 .....4.525

STRIP, Cold-Rolled Carbon
Anderson,Ind. G6 .....5.45
Bridgeprt,Conn. (10)S15..5.75
Cleveland A7, J5 .....5.45
Dearborn,Mich. D3 ....5.65
Detroit P20 .....5.65
Detroit D2, M1 .....5.65
Dover,O. G6 .....5.45
Ecorse,Mich. G5 .....5.65
Follansbee,W.Va. F4 ...5.45
Fontana,Calif. K1 ....7.35
FranklinPark,Ill. T6 ...5.70
Ind.Harbor,Ind. I-2 ....5.70
Lackawanna,N.Y. B2 ..5.45
LosAngeles C1 .....7.50
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.45
NewBedford,Mass. R10 .6.00
NewBritain(10) S15 ....5.75
NewCastle,Pa. B4, E5..5.45
NewHaven,Conn. A7 ....6.20
NewHaven,Conn. D2 ...5.90
Pawtucket,R.I. N8, R3 6.30
Pittsburgh J5 .....5.45
Riverdale,Ill. A1 .....5.70
Rome,N.Y.(29) R6 .....5.45
Sharon,Pa. S3 .....5.45
SparrowsPoint,Md. B2 ..5.45
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2 ....6.20
Warren,O.(40) T5 .....5.45
Warren,O. B9, R2 .....5.45
Weirton,W.Va. W6 .....5.45
Worcester,Mass. W19 ...7.05
Worcester,Mass. A7 ....6.30
Youngstown C8 .....5.95
Youngstown Y1 .....5.45

STRIP, Cold-Rolled Alloy Steel
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....12.00
Dover,O. G6 .....12.00
Fontana,Calif. K1 ....13.65
Harrison,N.J. C18 ....12.00
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8 12.45
Sharon,Pa. S3 .....12.90
Worcester,Mass. A7 ..12.30
Youngstown C8 .....12.00

STRIP, Cold-Rolled High-Strength Low-Alloy
Cleveland J5 .....7.80
Cleveland A7 .....8.15
Dearborn,Mich. D3 ....7.90
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.35
Lackawanna,N.Y. B2 ..8.15
Pittsburgh J5 .....7.80
Sharon,Pa. S3 .....7.65
SparrowsPoint, Md. B2..8.15
Warren,O. R2 .....7.60
Weirton,W.Va. W6 ....8.15
Youngstown Y1 .....8.30

STRIP, Cold-Rolled Ingot Iron
Warren,O. R2 .....6.05

STRIP, Electrogalvanized
Dover,O. G6 .....5.45
Warren,O. B9, T5 .....5.45
Weirton,W.Va. W6 ....5.45
Youngstown C8 .....5.70

TIGHT COOPERAGE HOOP
Atlanta A11 .....4.65
Riverdale,Ill. A1 .....4.50
Sharon,Pa. S3 .....4.35
Youngstown U5 .....4.35

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American CladmetalsCo.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co. Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P20 Prod.Steel Strip Corp.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons,JohnA.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S25 StainlessWeldedProducts
S26 Specialty Wire Co. Inc.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad.& Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
V2 Vanadium-Alloys Steel
V3 Vulcan Crucible SteelCo.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel&Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet & Tube

STRIP, Cold-Finished Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) S15	5.75	7.65	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.90	10.85	....
Carnegie,Pa. S18	...	7.65	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearborn,Mich. D3	5.65	7.85	8.80	....	....
Detroit D2	5.65	7.85	8.45	10.55	....
Dover,O. G6	5.45	7.65	8.60	10.55	12.85
FranklinPark,Ill. T6	5.70	7.80	8.75	10.70	13.00
Harrison,N.J. C18	...	...	8.90	10.85	13.15
Mattapan,Mass. T6	6.30	7.95	8.90	10.85	13.15
NewBritn.,Conn.(10) S15	5.75	7.65	8.60	10.55	12.85
NewCastle,Pa. B4	5.45	7.65	8.60	....	....
NewCastle,Pa. E5	5.45	8.00	8.60	10.55	12.85
NewHaven,Conn. D2	5.90	7.95	8.55	10.65	....
NewYork W3	...	7.95	8.90	10.85	13.15
Pawtucket,R.I. (11) N8	...	7.65	8.60	10.55	12.85
Pawtucket,R.I. (12) N8	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S3	5.45	7.65	8.60	10.55	12.85
Trenton,N.J. R5	...	7.95	8.90	10.85	13.15
Wallingford,Conn. W2	6.20	7.95	8.90	10.85	13.15
Warren,O. T5	5.45	7.65	8.60	10.55	12.85
Weirton,W.Va. W6	5.45	7.65	8.60	10.55	12.85
Worcester,Mass. A7, T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	7.65	8.60	10.55	12.85
Spring Steel (Tempered)					
Buffalo W12	...	...	12.50	....	....
Bristol,Conn. W1	...	...	12.50	15.00	....
FranklinPark,Ill. T6			*11.25*	*13.75*	*18.75*
Harrison,N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Worcester,Mass. W12	...	...	12.50	....	....
Youngstown C8	...	...	12.50	15.00	18.00

SILICON STEEL

SHEETS, SILICON, H.R. or C.R.(22Ga.) COILS (Cut Lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom,W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge,Pa. A1			*8.75*	*9.75*	*10.65*
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	....
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	....
Mansfield,O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport,Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles,O. N12 (cut lengths)	7.55	7.85	8.35	...	....
Vandergrift U5 (H.R., cut lengths)	...	...	8.15	8.75	9.75 10.65
Warren,O. R2 (H.R.Sheets)	*7.85*	*8.15*	*8.75*	*9.75*	
Zanesville,O. A10	...	...	8.35	8.85	10.10 10.90

C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.) Fully Processed (Semi-processed ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
Vandergrift,Pa. U5	8.65*	8.90	9.50	10.50	11.40
Warren,O. R2	*8.05†*	*8.90*	*9.50*	*10.50*	*11.40*

*Semi-processed †Fully processed.

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom,W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge,Pa. A1	*11.60*			
Newport,Ky. N9 (cut lengths)	10.95	....	....	....
Vandergrift,Pa. U5 (cut lengths)	11.60	12.15	12.65	13.65
Warren,O. R2	*12.45†*			
Zanesville,O. A10	11.45	12.00	12.70	13.50

C.R. coils, annealed; semi-processed ½c lower.

C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10	...	....	16.05	16.55
Vandergrift,Pa. U5	13.65	14.65	16.25	16.75

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American 1.25 1.50 Coke (Base Box)	lb	lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	8.95
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.10

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb (Commercial Quality)	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Alton,Ill. L1	5.70
Atlanta A11	5.725
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20, R2	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.75
Houston S5	5.925
Jacksonville,Fla. M8	6.05
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	5.625
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo. C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.525
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.10
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa. B2	6.925
LosAngeles B3	7.875
Millbury,Mass. (12) N6	7.225
Minnequa,Colo. C10	7.175
Monessen,Pa. P7	6.925
Monessen,Pa. P16	6.925
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.875
Portsmouth,O. P12	6.925
Roebling,N.J. R5	7.225
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt.,Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.80
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.80
Monessen,Pa. P7, P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So.Chicago,Ill. R2	6.625
So.SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving(8" Coils)	
Alton,Ill. L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawfordsville,Ind. M8	10.65
Fostoria,O. S1	10.55
Jacksonville,Fla. M8	11.08
Johnstown,Pa. B2	10.55
Kokomo,Ind. C16	10.55
Minnequa,Colo. C10	10.30
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass .W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7, T6	10.85

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.50
Buffalo W12	9.50
Johnstown,Pa. B2	9.50
Minnequa,Colo. C10	9.625
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE	(A)
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo,W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind. I-7	9.55
Palmer,Mass W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.55
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Crawfordsville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
FranklinPark,Ill. T6	7.60
Massillon,O. R8	7.45
Monessen Pa. P7, P16	7.45
Pawtkt.,R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6, W12	7.75

WIRE, Merchant Quality (6 to 8 gage)	An'ld. Galv.
Ala.City R2	6.675 7.075**
Aliquippa J5	6.675 7.20*
Atlanta A11	6.775 7.30
Bartonville(48)K4	6.775 7.30
Buffalo W12	6.675 7.075†
Cleveland A7	6.675 ....
Crawfordsville M8	6.775 7.30
Donora,Pa. A7	6.675 7.075†
Duluth,Minn. A7	6.675 7.075†
Fairfield T2	6.675 7.075†
Houston,Tex. S5	7.075 7.475
Jacksonville,Fla. M8	7.20 7.73
JohnstownB2(48)	6.675 7.225*
Joliet,Ill. A7	6.675 7.075†
KansasCity,Mo.S5	7.275 7.675
Kokomo C16	6.775 7.175†
LosAngeles B3	7.625 ....
Minnequa C10	6.925 7.325**
Monessen P7(48)	6.675 7.225
Palmer W12	6.975 7.375†
Pitts.,Calif. C11	7.625 8.025†
Rankin A7	6.675 7.075†
So.Chi'go R2	6.675 7.075**
S.S.Frn.(48)C10	7.625 8.025**
Spar'wsPt.B2(48)	6.775 7.325*
Steri'g(1)(48)	N15 6.675 7.20
Struthers,O.	Y1..6.675 7.175
Worcester A7	6.975 ....

* Based on 10c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga.	Col.
Ala.City,Ala. R2	140**
Ala.City, 17 ga. R2	235**
Ala.City 18 ga. R2	245**
Alip'ppa,Pa.9-14½ga. J5	143*
Atlanta A11	145
Bartonville,Ill. K4	145
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17 ga.,6"B2	234
Johnstown 4" B2	237
Joliet, Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142†
Minnequa,Colo. C10	148**
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140**
Sterling,Ill. (1) N15	143

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	149
Atlanta A11	151
Bartonville,Ill. K4	151
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo.C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.,Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

WIRE, Barbed	Col.
AlabamaCity R2	153**
Aliquippa J5	150*
Atlanta A11	158
Bartonville,Ill. K4	158
Crawfordsville,Ind. M8	158
Donora,Pa. A7	153†
Duluth,Minn A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156*
Joliet,Ill. A7	153†
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155†
Minnequa,Colo. C10	159**
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153**
S.SanFrancisco C10	176**
SparrowsPoint,Md. B2	158*
Sterling,Ill. (1) N15	156

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

WIRE, (16 gage)	An'ld. Galv. Stone	Stone
Ala.City R2	12.50	14.05**
Aliquippa J5	12.50	14.30*
Bartonville K4	12.60	14.40
Buffalo W12	12.50	....
Cleveland A7	12.50	....
Crawfordsville M8	12.50	14.30
Fostoria,O. S1	12.60	14.15
Johnstown B2	12.50	14.35*
Kokomo C16	12.60	14.15†
Minnequa C10	12.75	14.45**
Palmer,Mass.W12	12.50	14.05†
Pitts.,Calif. C11	12.85	14.40†
SparrowsPt. B2	12.60	14.45*
Sterling(1) N15	12.50	14.30
Waukegan A7	12.50	14.05†
Worcester A7	12.80	....

* Based on 11c zinc; †5c zinc; ** Subject to zinc equalization extras.

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	131
Atlanta A11	133
Bartonville,Ill. K4	133
Chicago,Ill. W13	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, CUT (100 lb keg) To dealers (33)	
Conshohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	133
Aliquippa,Pa. J5	133
Atlanta A11	135
Bartonville,Ill. K4	135
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Rankin,Pa. A7	133
So.Chicago,Ill. R2	133
SparrowsPt.,Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	145
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa, Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	15.75	...	19.75	...	22.25	...	23.75	...	23.75	...	23	...	25.5	...
Lorain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.5	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	15.75	0.75	19.75	3	22.25	5.5	23.75	7	23.75	7	23	6.25	25.5	8.75

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	....	....	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Alton, Ill. L1 (§)	...	...	....	....	....	....	24.25	9	27.25	13	29.75	16.5	32.25	17.5	32.75	18.25
Benwood, W. Va. W10(††)	25.5	+0.25	17.75	+5.5	10.25	+10	26.25	11	29.25	15	31.75	18.5	34.25	19.5	34.75	20.25
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	...	...	...	...	...	...	...	...	...	...
Etna, Pa. N2 (†)	...	...	....	...	....	....	26.25	7	29.25	11	31.75	14.5	34.25	16.25	34.75	17.25
Fontana, Calif. K1 (‖)	...	...	....	...	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
Ind. Harbor Y1 (††)	...	...	....	...	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
Lorain, O. N3 (*)	...	...	....	...	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
Sharon, Pa. S4 (‡)	26.5	−0.25	19.50	+4.25	12.5	+8.5	...	...	...	...	...	...	...	...	...	...
Sharon, Pa. M6	...	...	....	...	....	....	26.25	11	29.25	15	31.75	18.5	34.25	19.25	34.75	20.25
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
Youngstown R2 (**)	...	...	....	...	....	....	26.25	11	29.25	15	31.75	18.5	34.25	19.25	34.75	20.25
Youngstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Wheatland, Pa. W9 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5

Size—Inches	2		2½		3		3½		4	
List Per Ft	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....
Alton, Ill. L1 (§)	33.25	18.75	34.75	18	34.75	18	....	....	....	....
Benwood, W.Va. W10(††)	35.25	20.75	36.75	20.5	36.75	20.5	27.75	11	27.75	11
Etna, Pa. N2 (†)	35.25	17.25	36.75	18.5	36.75	18.5	27.75	9	27.75	9
Fontana, Calif. K1 (‖)	22.25	7	23.75	7	23.75	7	....	....	....	....
Ind. Harbor, Ind. Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....
Sharon, Pa. M6	35.25	20.75	36.75	20.5	36.75	20.5	....	....	....	....
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
Youngstown R2 (**)	35.25	20.75	36.75	20.5	36.75	20.5	27.75	11	27.75	11
Youngstown Y1 (††)	35.25	20	36.75	20	36.75	20	....	....	....	....
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), 10c to under 11c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollar per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.31	18.44
1¼	13	....	25.24	18.12
1½	15	23.12	27.89	20.01
1¾	13	26.84	32.37	23.66
2	13	30.08	36.28	26.51
2¼	13	34.18	41.23	29.86
2½	12	37.10	44.75	32.41
2½	12	40.51	48.86	35.70
2¾	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Ensley,Ala. T2	4.325	4.225	....	5.20
Fairfield,Ala. T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	...
Huntington,W.Va. W7	....	....	....	5.20
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	...
Johnstown,Pa. B2	....	....	...(16)	5.20
Lackawanna,N.Y. B2	4.325	4.225	....	5.20
Minnequa,Colo. C10	4.325	4.125	....	5.70
Steelton,Pa. B2	4.325	4.225	....	...
Williamsport,Pa. S19	....	....	....	5.20

TIE PLATES

Fairfield,Ala. T2 .....5.125
Gary,Ind. U5 .....5.125
Ind.Harbor,Ind. I-2 ...5.125
Lackawanna,N.Y. B2 ..5.125
Minnequa,Colo. C10 ...5.125
Pittsburg,Calif. C11 ...5.275
Seattle B3 .....5.275
Steelton,Pa. B2 .....5.125
Torrance,Calif. C11 ...5.275

TRACK BOLTS (20) Treated

Cleveland R2 .....11.00
KansasCity,Mo. S5 ....11.00
Lebanon,Pa. B2 .....11.00
Minnequa,Colo. C10 ...11.00
Pittsburgh O3, P14 ....11.00

JOINT BARS

Bessemer,Pa. U5 .....5.275
Fairfield,Ala. T2 .....5.275
Ind.Harbor,Ind. I-2 ...5.275
Joliet,Ill. U5 .....5.275
Lackawanna,N.Y. B2 ..5.275
Minnequa,Colo. C10 ...5.275
Steelton,Pa. B2 .....5.275

AXLES

Ind.Harbor,Ind. S13 ....6.50
Johnstown,Pa. B2 .....6.50

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1 7.05
KansasCity,Mo. S5 .... 7.30
Lebanon,Pa. B2 .... 7.05
Minnequa,Colo. C10 .... 7.05
Pittsburgh J5 .... 7.05
Seattle B3 .... 7.55
So.Chicago,Ill. R2 .... 7.05
Struthers,O. Y1 .... 7.05
Youngstown R2 .... 7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ⅜-in., larger 8.90c
7/16-in. under .....26.5 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:
½-in. & smaller diam. 4
⅝-in. & ⅝-in. 5
¾-in. and larger ... 3
Longer than 6 in.:
All diams. ..... +4
Lag bolts, all diams.:
6 in. and shorter.... 12
Over 6 in. long 8
Ribbed Necked Carriage 5
Blank 25
Plow 25
Step, Elevator, Tap and Sleigh Shoe 12
Tire Bolts ..... List
Boiler & Fitting-Up Bolts 23

NUTS

H.P. & C.P., regular & heavy:
Square, all sizes 58
H.P., Hex, regular & heavy:
⅜" and smaller 58
⅞" to 1¼", inclusive. 60
1¼" to 1½", inclusive 62
1⅝" and larger 58
C.P. Hex, regular heavy:
All sizes 58
Hot Galv. Nuts (all types):
¾" and smaller 40
⅞" to 1½", inclusive. 43
Finished Hex Nuts:
New standard, all sizes 58
Semifinished & Slotted Hex.:
Regular and heavy, all sizes 58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter 34
1 in. and smaller diam. x over 6 in. 20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 34
¼-in. diam. & larger... 14
N.F. thread, all diams.. 8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish .....47.5 & 10
Plated finishes ..... 30 x 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
⅝-in. & smaller 38
⅞-in. through 1 in. .. 22
Longer than 6 in.:
⅝-in. and smaller ... 20
⅞-in. through 1 in. .. 7

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) 3/8" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon and 0.35c for H.S.L.A.
(31) Base; deld. within mill county.
(32) To jobbers, deduct 20c.
(33) To jobbers, deduct 20c.
(34) 2.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 gage & lighter; 60" & narrower.
(38) 14 gage & lighter; 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(48) 6-2 gage.
(49) T-post; deduct 2 cols. for U-post.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed.	18.00
Unannealed	14.50
Swedish, c.l.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe), (minus 325 mesh)	53.50
Powder Flakes (minus 16, plus 100 mesh)..	31.00
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns..83.00-148.00	
Aluminum:	
Atomized, 500 lb drums, freight allowed:	
Carlots	31.00
Ton lots	34.00
Antimony, 500 lb lots	32.00*
Brass, 20-ton lots	29.25-36.50
Bronze, 10-ton lots 51.00-60.00	
Copper:	
Electrolytic 13.50*	
Reduced 13.50*	
Lead	7.50*
Magnesium 75.00-85.00	
Manganese:	
Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	47.00
Silicon	43.50
Solder	8.50*
Stainless Steel, 302 ...	91.00
Tin 14.00*	
Zinc, 10-ton lots..17.50-25.00	
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over ...	5.35
Less than 1000 lb ..	5.50
Chromium, electrolytic 99.9% Cr min.	3.60

*Plus cost of metal.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
304L	....	....	36.75	....	....	42.75	45.25	54.25	49.00
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
316L	....	....	52.50	....	....	61.00	64.25	70.00	72.00
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
414	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Shenango Agaloy Tube Co.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.10	35.50-40.50	40.50	130.00
405	23.40	30.60	....	....
410	22.90	30.10	....	....
430	22.90	30.10	....	....
Inconel	41.23	54.18	....	165.00
Nickel	37.50	50.90	....	....
Monel	38.90	51.80	....	....
Copper*	....	....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.25-.285	5% Cr Hot Work	0.39
Extra Carbon	0.30-.340	W-Cr Hot Work	0.41
Special Carbon	0.35-.360	V-Cr Hot Work	0.43
Oil Hardening	0.370-.39	Hi-Carbon-Cr.	0.665-.70

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	....	4.055
18.25	4.25	1	4.75	....	2.340
18	4	2	9	....	2.565-2.695
18	4	2	....	....	1.820
18	4	1	....	....	1.480-1.660
13.5	4	3	....	....	1.875
6.4	4.5	1.9	....	5	1.065
6	4	3	....	6	1.300
2	1.4	1.2	....	....	0.495
1.5	4	1	....	8.5	0.895

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON Gross Ton

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	....	....
Woodward,Ala. W15	52.38	52.88	56.50†	....
Cincinnati, deld.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No.Tonawanda,N.Y. T9	....	56.50	57.00	....
Boston, deld.	66.65	67.15	67.65	....
Rochester,N.Y., deld.	59.02	59.52	60.02	....
Syracuse,N.Y., deld.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So. Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., deld. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
New York, deld.	....	62.28	62.78	....
Newark, deld.	61.02	61.52	62.02	62.52
Philadelphia, deld.	60.75	61.25	61.75	62.25
Birdsboro,Pa. B10	58.00	58.50	....	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Troy,N.Y. R2	58.00	58.50	59.00	....
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Ambridge, Aliquippa, deld.	57.37	57.87	57.87	58.37
McKeesRocks, deld.	57.04	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	57.66	58.16	58.16	58.66
Verona,Trafford, deld.	58.19	58.69	58.69	59.19
Brackenridge, deld.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., deld.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	59.50	63.00	63.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T3	....	....	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	....	....

*Low phos. southern grade. †Phos., 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	*92.00*
Keokuk, OH & Fdry, 12½ lb. piglets, 10% Si, frt. allowed K2	*95.00*
Wenatchee,Wash. OH & Fdry, freight allowed K2	*92.00*

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00

"*Now with a G Bond wheel we can go completely around a 16-inch face mill,*" writes the tool supervisor of a New Jersey plant. "Previously, due to wheel wear we had to index this type of cutter at four different positions. Now, on a finish cut, we can go completely around, and the cutter runs absolutely true within .0005 inches. These new G Bond wheels have very good, cool cutting action, don't break down or leave jagged edges . . . We'll be using plenty of them on our tool room jobs."

New G BOND sets new records in tool room grinding

Here's Proof... Users praise the many "TOUCH of GOLD" *advantages in Norton pace-setting wheels*

Norton G Bond wheels have sure started something! In tool and cutter grinding, as in many other forms of precision and semi-precision grinding, they're giving users an entirely new slant on how efficient, long-lasting and profitable wheels can be.

What Users Say About New G Bond Wheels

"Good finish, longer wheel life."

"Heavier feeds without burn."

"Run absolutely true."

"No breakdown—no jagged edges."

"Cut freely, hold shape with no burning."

"They show how a real wheel will cut."

G Bond Alundum Wheels In Your Own Tool Room*

will take heavier cuts in expensive, heat-sensitive steels without drawing temper. They'll reduce tool spoilage, give you closer tolerances and smoother finishes than you ever got before — with fewer wheel changes and machine adjustments . . . Those are the value-adding, money-saving "Touch of Gold" advantages that make G Bond wheels outperform any others you ever used.

Your Norton Distributor

can recommend the right G Bond wheels for your jobs. Contact him or write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities, listed under "Grinding Wheels" in your classified phone directory. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

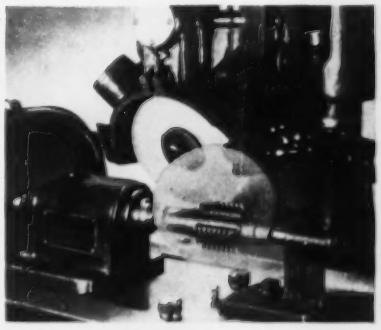
W-1532

NORTON

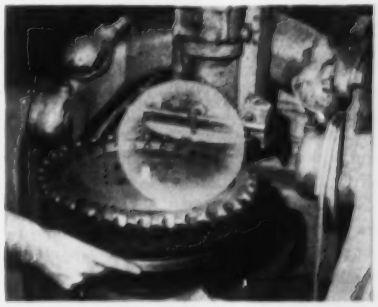
ABRASIVES

Making better products... to make other products better

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries



"*Better cut and less burn* than previous Norton or other make wheels. We're re-ordering 250 G Bond wheels," was the comment from this Ohio tool company.



"*We're using heavier feeds* with G Bond wheels — and getting faster sharpening."

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, St. Paul, 15 cents; Seattle and Spokane, Wash., no charge.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	6.20	7.64	7.78	7.00	...	6.86	8.17[6]	12.04	6.98	6.85	7.98
Birmingham	6.10	7.60	8.60[2]	6.30	...	6.15	8.90	....	6.35	6.35	8.65
Boston	6.89	7.83	9.18	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	8.96	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.69	6.96	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.00	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.42	6.72	...	6.58	7.66	12.17	6.93	6.80	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.40	11.89	6.79	6.50	7.79
Detroit	6.38	7.29	8.27	6.69	7.36	6.56	7.60	11.92	6.90	6.80	7.80
Erie, Pa.	6.19	7.13	9.01	6.54	...	6.28	7.65	....	6.56	6.50	7.79
Houston	7.15	7.60	9.40	7.45	9.30	7.45	9.30	....	7.35	7.20	8.55
Jersey City, N.J.	6.54	7.45	8.42	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.17	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.35	6.77	...	6.63	7.65	....	6.81	6.68	...
New York	6.54	7.45	8.42	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	8.42	7.16	...	7.06	8.43[6]	....	6.90	6.99	8.30
Norfolk, Va.	6.90	...	...	7.20	...	7.20	8.50	....	7.20	7.15	7.85
Philadelphia	6.17	7.13	7.90	7.02	8.80	6.87	8.19[6]	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.00	6.55	...	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg.	8.15	8.70	9.40	7.90	...	7.60	10.65	....	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	...	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.30	6.72	...	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.66	7.08	...	6.94	8.06	....	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	9.50	9.80	8.00	...	7.60	10.65	13.50	7.50	7.60	9.40
Spokane	8.15	9.40[7]	9.80	7.60	...	7.60	10.55[8]	14.15	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extras excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb and in Erie where base is 1000 lb and over; [2]—500 to 9999 lb; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ½ in.

Warehouse Adopts Delivered Pricing

Bridgeport distributor puts new schedule into effect on low carbon cold-rolled strip. Eliminates bothersome computing of base prices and extras by consumers

Boston—Dolan Steel Co. Inc., Bridgeport, Conn., distributor of cold-rolled strip, low carbon in coils and lengths, has revised pricing policy, quoting net delivered price consumer's plant.

This pricing schedule covers all quantity brackets, widths and gages for coils and lengths, in effect eliminating warehouse base price and enabling consumers to establish low carbon cold strip costs at a glance. Buyers do not have to figure size or quantity extras in writing up orders.

The one-price net delivered schedule initiated by Dolan is the first applied to warehouse distribution and does not represent price reductions; both hard and soft grades are included.

Base price table covers delivery to any point in Connecticut. For delivery to metropolitan New York and New Jersey 10 cents per 100 pounds is added; western Massachusetts, east to Worcester, 15 cents; east of Worcester, Boston area, north to Lynn, and all Rhode Island, 20 cents; north of Lynn and southern New Hampshire, 30 cents; Syracuse and central New York, 40 cents.

Boston—Improvement in steel demand from warehouse is gradual. March is expected to be the best month this quarter. Inventories are in best balance in recent years and distributors are able to fill a wider range of orders, which average smaller individually. Pickup in demand for nickel stainless is slow. Inventories of straight chromium grades were heavier than estimated.

Philadelphia—Warehouse demand may prove to be better in January than in the preceding month when volume was off possibly 10 per cent from that of November. However, doubt exists as to whether or not this loss will be fully offset this month.

Leading distributors here experienced a better year in 1953, dollar-wise, than in 1952. Business was

STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A-305	$4.65	$4.75	$4.65	$4.90
Bar Size Angles	4.30	4.40	4.30	4.58
Structural Angles	4.30	4.40	4.30	4.58
I-Beams	4.30	4.40	4.30	4.58
Wide Flange Beams	4.94	5.02	4.94	5.22
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.87	5.95	5.87	6.25
Furring Channels, C.R., 1000 ft, ¾ x 0.30 lb per ft	25.00	25.70	25.50	26.34
Barbed Wire	6.20	6.30	6.20	6.48
Merchant Bars	4.55	4.65	4.55	4.83
Hot Rolled Bands	4.65	4.75	4.65	4.93
Wire Rods, Thomas Commercial No. 5	4.68	4.75	4.73	5.00
Wire Rods, O-H, Cold Heading Quality No. 5	5.14	5.21	5.19	5.46
Channels	4.40	4.50	4.40	4.68
Bright Common Wire Nails, 8d	6.55	6.65	6.60	6.85

Size O.D.	Wgt/Foot/Lb	Gulf Port	West Coast	Vancouver
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅞ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

good and added to that were broad price increases around the middle of the year. Volume may have been a shade better on a tonnage basis.

Pittsburgh—Freight absorption on fringes of the Pittsburgh area increases as warehouses recover from the yearend doldrums. Both distributors and consumers slowed down recently to check inventories and round out stocks. Warehouses are able to supply customers with virtually all products.

While some houses have no concrete evidence January sales will improve over dull December, others are beginning to work on a sizable build-up of orders for January. December was the only slow month for the warehouses last year.

Chicago—Slack in receipt of orders has resulted in warehouses establishing their inventories close to ideal. Tonnagewise there is nothing to be desired but there are still certain gaps in size and specifications range.

Cleveland—Local steel distributors expect January order volume to better that of December which was off because of the letdown over the holidays. Inventories are in balance on most items and with buyers inclined to hold back on orders, warehouse salesmen are beating the bushes for orders as had not been the case for a long time past.

Cincinnati—Local warehouses are becoming increasingly selective in what they order from the mills, as stocks become more plentiful.

San Francisco—Warehouses are looking for business. They hold good stocks except for a few items, such as structurals and heavy plates. While there currently is a lull in business, the distributors anticipate favorable volume this year.

Seattle—The steel warehouse trade experienced a poor month in December. Buying was limited with consumers depending on stocks on hand. Disposition to postpone orders continues. Prices are unchanged. Improvement in business is expected to develop slowly.

Rails, Cars . . .

Track Material Prices, Page 113

New York—While diesel electric locomotive demand continues active, being featured currently by the placing of 205 units by the Union Pacific, the lag in freight car business is pronounced. Most commercial car shops hold limited order backlogs, and some may be completely wound up on present work by end of first quarter unless new orders develop in the meantime. Carbuilders are seeking to diversify their production.

Sheetmakers Expect Active Quarter

Full rolling schedules indicated at leading mills this month despite the sluggish buying of recent weeks. Releases reported coming through of tonnage deferred in December

Sheet and Strip Prices, Page 110 & 111

Pittsburgh—Production and shipments are picking up. Incoming orders are expected to improve next month. Inventory minded customers have trimmed their stocks to the extent they require quick delivery from warehouses.

U. S. Steel Corp. issued a new extra book Dec. 23, on galvanized flat sheets, galvannealed sheets, corrugated culvert sheets and paint bond sheets. The new lists contain slight packaging revisions.

Prices on silicon steel sheets and coils used in transformers, generators and motors were increased by Allegheny Ludlum Steel Corp., effective Jan. 24. Base prices of regular grades of silicon sheets, 22 gage, 28-36 inches in width, were raised $15 per ton. Two grades of grain-oriented silicon strip were raised $4 a ton. The new prices reflect more closely the actual cost of production.

Increases in certain grades of silicon sheets were effected by the U. S. Steel Corp. about two weeks ago.

Boston—Increase in cold-rolled sheet buying is attributed to suppliers of parts and components for the automobile industry. Users in this category are placing heavier tonnage for February, also for March where orders for releases on parts extend through first quarter.

Other consumers are placing orders for February in slightly better volume.

March schedules include some deferred volume from the first two months of the year.

Cold strip converters confine hot-rolled buying to specific new requirements, operating off inventory to cover the balance of backlogs.

New York—February bookings are building up slowly, although the tempo of new buying is better. In general, producers anticipate a fairly good production month. No little tonnage on rolling schedules represents that deferred from fourth quarter. This will also be true to certain degree in March as well. By April sellers look for all deferred tonnage to have been worked off.

Of the major grades, cold-rolled sheets continue in better demand than hot-rolled, although there is still plenty of capacity in February for each. Sheet production this month will far from tax facilities, but due to the fact the month is now well along, little additional tonnage can be added.

Philadelphia—Sheet sellers are encouraged by some pickup in demand from the automotive industry. Specifications from manufacturers of radio and television sets are slack. Little is coming out from railroad equipment builders and, so far as freight car needs are concerned, little is in sight. Demand for deep-freeze and refrigeration units is fair, that for air conditioning dull, but definite improvement is anticipated.

Cleveland—Larger sheetmakers' January rolling schedules are full and new business is coming in for February at a promising rate. Some producers look for a noticeable bulge in demand over the next few weeks, in fact, to such extent there may be a carryover from February to March.

Automotive demand is strong though the mills report tonnage is not coming out like it was a year ago at this time. Still, it is not too far behind. Other lines of consump-

225-Ton Ingot Emerges

Largest rectangular ingot ever cast at Bethlehem Steel Co.'s Bethlehem, Pa., plant is stripped from a mold measuring 70 x 155 x 200 in. Weighing 225 tons, it will be forged into a crosshead support for a 35,000-ton die forging press being constructed by Loewy Construction Co., New York

tion are ordering more cautiously than has been the practice in recent years, but with inventories shrinking indications are they will be forced to enter the market for substantial tonnage before the quarter is far along.

Republic Steel Corp. issued a new price schedule on silicon sheets and coils, effective Jan. 5.

Cincinnati—Sheet and strip sales at mill level offer a mixed picture here. One mill is busy while another is practically dormant.

Chicago—Automotive buying stands as a bright spot in cold-rolled and hot-rolled sheet demand with the bulk of this coming from two of the larger companies. In general, demand is dragging presumably because consumers have not yet reduced their inventories to the level sought.

St. Louis—Uncertainty marks the sheet market and mills predict January will be the weathervane month forecasting demand the rest of the year. Optimism is widespread the Midwest will hold up exceptionally well when consumers' inventories are worked off. Principal sheetmaker here reports first quarter is not filled but a nine-week order backlog is on hand.

Steel Bars . . .

Bar Prices, Page 110

Cleveland—While pressure on the bar mills is not what it was at this time a year ago substantial volume of business is on books for first quarter. Demand is expected to rise steadily as the quarter progresses, especially from automotive lines. Meanwhile, competition for orders is keen and freight absorption is a factor in the market as buyers play one producer against another. So far as can be determined base prices are firm.

Pittsburgh—U. S. Steel Corp. issued a revision of extras on hot-rolled carbon steel bars Dec. 23, revising lists dated Apr. 30, 1953. A second revision on the same date concerned hot-rolled alloy bars. New extras include increases of 50 cents per ton on rounds of 9/16 to 19/32 of an inch and $1.50 per ton on rounds of 39/64 to 47/64-inch. Size extras for near square receive a small increase.

Generally consumers are holding back on orders until they can judge strength of demand. This caution results in some uncertainty about size of orders and capacity of operations in January.

Boston—Cold-finished carbon bar bookings beyond this month are slow. Even where consumer inventories are low, availability, competitive selling and prompt shipments tend to hold down forward buying. Freight absorption on bars, carbon and alloy, has increased.

Philadelphia—While January bar production will continue on a limited scale, inquiry is a shade more promising for February. There is more demand for inventory replacement and consumers see better work ahead from automotive manufacturers and capital equipment makers.

Cincinanti—Alloy and carbon bars are plentiful. One seller estimates demand for alloy bars in February and March will be off 40 per cent from a year ago.

Structural Shapes . . .

Structural Shape Prices, Page 110

New York—Structural steel awards for the first 11 months of last year totaled 2,580,348 tons, well in excess of tonnage in the corresponding period of 1952 and for the average of the same periods in the years 1947 through 1950, for which the totals were 2,267,257 and 2,162,128 tons, respectively, reports the American Institute of Steel Construction.

November contracts amounted to 151,498 tons, against the revised figure of 190,656 tons in October. Backlogs as of Dec. 1 amounted to 1,804,079 tons, down from 2,357,351 tons the year previously. However, they were up for the average on that date for the years 1947 through 1950, which was 1,407,149 tons.

Shipments for the first 11 months were 2,850,430 tons, against 2,439,094 tons in the corresponding period of 1952 and 2,057,157 tons, the average for that period in the years 1947-1950 inclusive. The November total was 257,489, against a revised figure of 295,459 for October.

Boston—Increase in bridge fabrication by district shops is emphasized by the entrance into this field of a Providence, R. I., area shop. Tower Iron Works has contracts for approximately 650 tons. This shop has rarely engaged in bridge building.

Bridge estimating is heavier with bids on 2200 tons, Connecticut, closed at Hartford, and inquiry mounting for Massachusetts. District shop backlogs average around four months. Plain structurals are in freer supply. Some easing in wide flange beam supply also is noted.

Pittsburgh—Mills have a comfortable carryover of orders into the first quarter. One area mill remained in operation during the holidays to catch up with its order backlog.

Delivery of wide flange beams, some fabricators say, is often two or three weeks late. All agree supply remains tight. Standard structural shapes are easing in supply.

Philadelphia—While shape supply is easier, including some larger sizes of wide flange sections, few deferments are noted. There is not the pressure for deliveries noted last fall, but consumers are accepting commitments as scheduled.

Currently, structural activity is featured by 12,000 tons of floor structure for the Philadelphia-Gloucester bridge over the Delaware river, bids due Feb. 11. Demand otherwise is spotty, due partly to seasonal influences.

San Francisco—Structural steel requirements for the office building being constructed for the Equitable Life Assurance Society of the United States will total approximately 5200 tons.

Seattle—Fabricators face 1954 with sizable order backlogs, but new business is keenly sought. Awards to local plants at yearend approximated 1000 tons.

Plates . . .

Plate Prices, Page 110

Boston—Most plate fabricators are not placing orders beyond February, although backlogs with users may approximate six weeks, as in the case of weldment shops. Downward trend in weldment orders has halted. Cancellations, notably in the aircraft industry, seem to have subsided and bookings are slightly heavier.

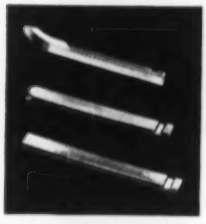
More plate tonnage is available in heavier sizes and selling is more competitive, pointing to moderate freight absorption later. Tank shop operations are relatively high, but backlogs are down compared with last year, this being true with other fabricators, structural shops excepted.

New York—Plate business is getting off to a slow start, although the overall expectation is demand will show some improvement after January. At present, two eastern producers continue to operate at a low ebb while another, which had been operating at virtual capacity through the closing weeks of last year, has begun to curtail.

Pittsburgh—Demand slowed during the holidays as fabricators cut operations. Producers are uncertain of early first quarter pickup in new orders. Plate mills are now at near-capacity levels. Fabricators report no difficulty in obtaining plates, although delivery is often slow.

Philadelphia—Plate inquiry has picked up a little but producers look

Good News for Pipe Smokers



*Another example of how Carpenter *Application Engineering Service is helping industry cut costs, build sales.*

Once a good pipe is "broken in", you can look forward to many hours of smoking pleasure. That is, provided you have an easy way to keep the inside of the pipe bowl in good shape. That's the reason for this reamer type pipe cleaner. You simply insert it in the bowl, turn the expanding blades to fit, then rotate the cleaner to remove excess "cake". These cleaners now sell all over the country . . . but here's the interesting story on how the manufacturer hurdled problems in perfecting the device:

The "heart" of the cleaner is in the cutting blades. For these, the manufacturer was using cold rolled steel, chrome plated. However, plating costs were too high . . . running 7c per blade. Also, plating produced a rounded, inefficient cutting edge. And to make matters worse, one out of three plated blades had to be rejected.

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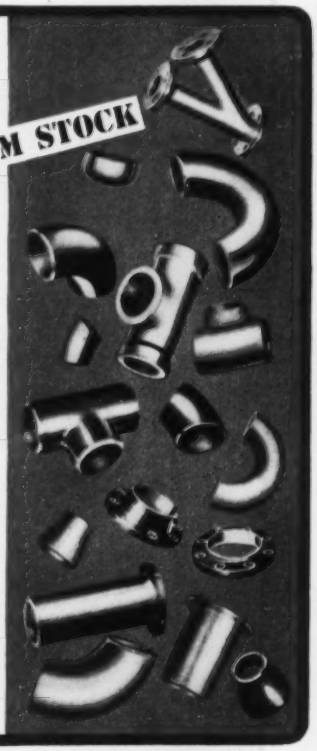

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Other Murray products include stainless steel pipe and tubing, boiler and pressure tubes, IPS pressure tubing, seamless cold-drawn and hot finished mechanical tubing, seamless and welded pipe, JIC hydraulic tubing and all types of tube fabricating.

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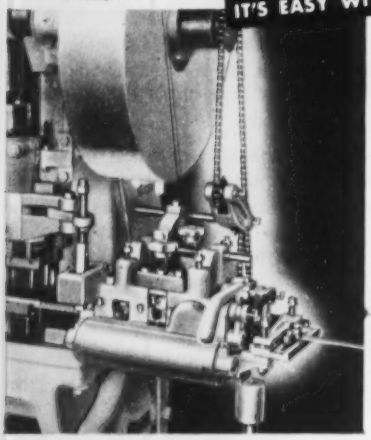

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WITTEK Reel Stands

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Choice of standard models to facilitate handling coiled stock . . . from small, light coils to those weighing up to 800 pounds. Larger reel stands automatically center the coils – provide frictional braking action to prevent overrunning, maintain uniform coil slack.

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Automatic ROLL FEEDS AND REEL STANDS

for no particular spurt until the current quarter is well under way. January will not be a good month for most mills, possibly averaging no better than December. February should be more active. By that time pipeline work and building construction should be showing more life.

Chicago—Plate supply now fairly well matches demand although one producer in this district is moderately oversold on this product for first quarter. Indications are, however, that the tendency will be toward easing rather than tightening.

Seattle—Award of about 10,000 tons of plates to Chicago Bridge & Iron Co. for Shell Oil Co.'s refinery tanks at Anacortes, Wash., was announced last week. Oil companies in this area are planning expansions and the outlook for plates is promising.

Wire . . .

Wire Prices, Page 112

Philadelphia—Little in the way of fourth quarter deferments is noted in certain wire products. However, these items were among the first to feel the slump in demand and signs indicate demand for them is picking up more rapidly than for other products.

In December various consumers began replacing inventories which they had allowed to get too low. This was true not only of the major grades but in certain of the wire specialties, such as stainless wire. Currently there is a moderate flurry in stainless wire.

St. Louis—Wire and bar production will reach a postwar low in January, after which a pickup is expected. Capacity operations, however, are not foreseen during the year.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 110

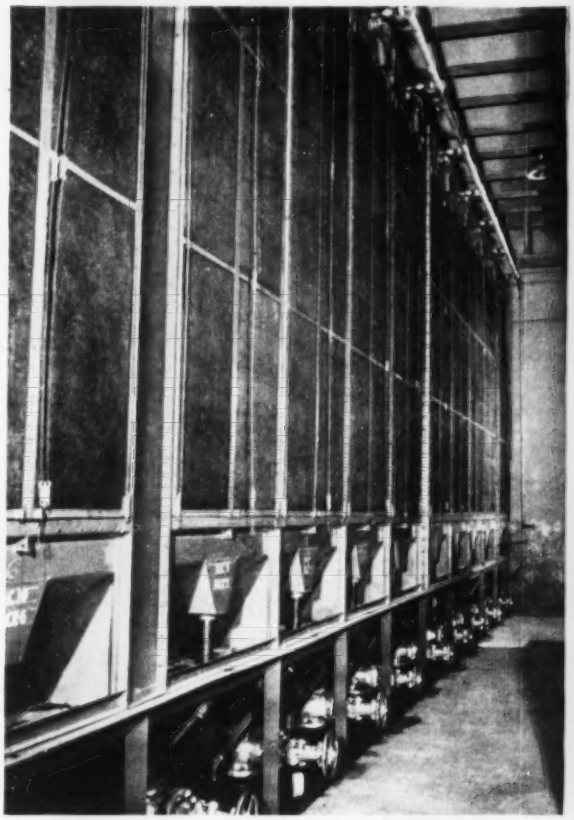
Chicago—Turn of the year is bringing evidence that a good demand for reinforcing material will prevail this spring and summer. Requirements for building purposes probably will fall below those of 1953, but state, county and city highway and bridge programs are substantial. Numerous awards are being made each week.

Boston—Concrete reinforcing steel bar prices are wobbling among distributors. Competition is keener with one rail steel producer, also selling billet steel bars, building up backlog.

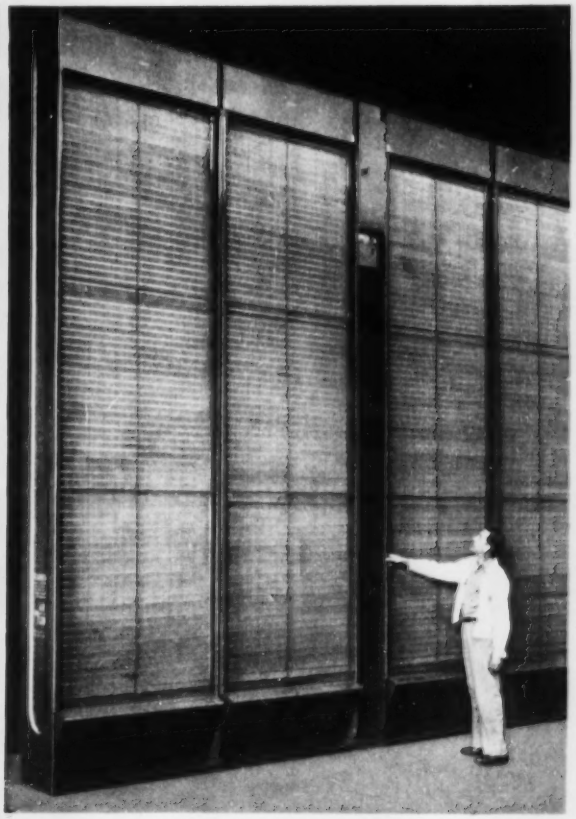
Bulk of substantial inquiry is for bridges with schools and military building contributing. Shop fabri-

(*Please Turn to Page* 123)

clean air costs less than dust!



A bank of AAF ELECTRO-MATICS in service at Weirton Steel Company. Fully-automatic and self-cleaning, these electronic precipitators require minimum maintenance.



Developed specially for the steel industry in 1923 by American Air Filter, the MULTI-DUTY features overlapping panel construction. Photo above shows latest model.

AAF offers two proved units for mill motor rooms

Two good reasons why more and more steel mills are specifying AAF air-cleaning equipment are the ELECTRO-MATIC precipitator and the MULTI-DUTY air filter. Thousands of these proved units are now in service throughout the country. Their day by day performance cuts maintenance costs, reduces costly shutdowns and increases general operating efficiency. Mill motors last longer when these air-cleaners are on hand.

ELECTRO-MATIC—The only automatic electronic precipitator — an exclusive development of AAF engineering and research combining the advantages of electronic air-cleaning and automatic operation.

MULTI-DUTY — The most widely-used automatic air filter — employs an overlapping panel construction of exclusive design. This results in high cleaning efficiency and positive self-cleaning of the filter elements to maintain uniform air delivery.

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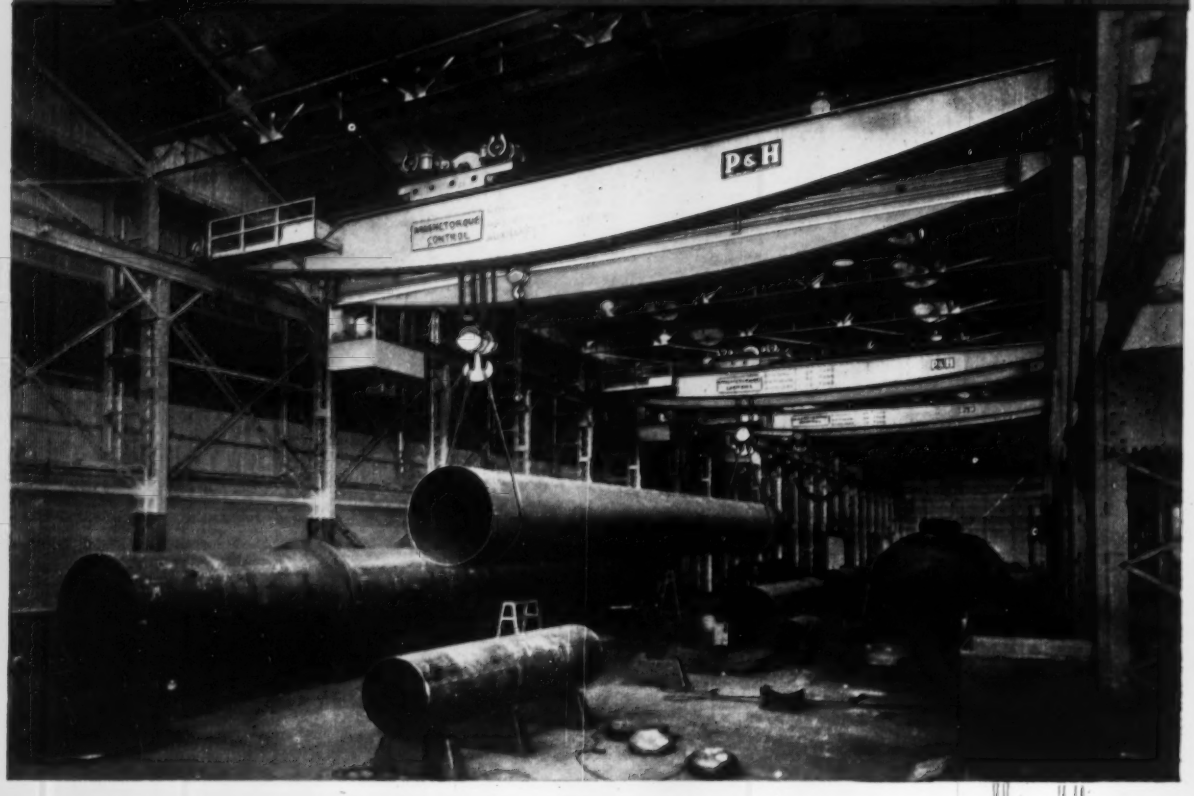

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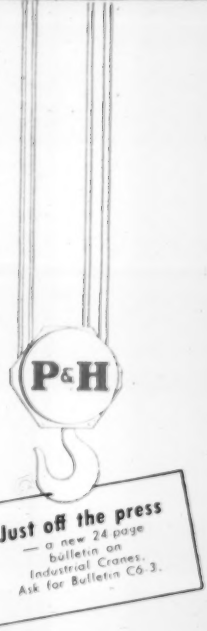

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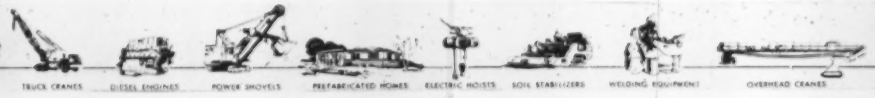

Reinforcing Bars . . .

(*Concluded from Page* 120)

cating and bending operations are not as active, while supply of bars in practically all sizes is adequate.

Seattle—Rolling mills are back to normal schedules following yearend maintenance and repair shutdowns. Order backlogs are low but considerable tonnage is pending, the largest being 17,000 tons of reinforcing bars for The Dalles dam. Competition is increasing.

Tin Plate . . .

Tin Plate Prices, Page 112.

Washington—Metal can shipments in October totaled 368,717 tons, reports the Census Bureau. This compares with 484,561 tons in September, and with 355,218 in October, 1952. Cumulative total for the first 10 months was 3,575,443 tons, comparing with 3,340,395 in the like 1952 period.

Of the 10-month total, 2,301,068 tons went into food cans, compared with 2,244,146 in the like period of 1952; and 1,274,375 tons went into non-food cans, against 1,096,249 in the corresponding period of the preceding year.

October shipments of food cans amounted to 239,111 tons against 346,645 in September; and non-food cans, 129,806 tons against 139,196.

San Francisco—Strikes at plants of major canmakers have resulted in only minor inconveniences to food processors and other users of containers. Some packing lines have been slowed down due to container shortages, but, in the main, canmakers not affected by the strikes have stepped into the breech.

Tubular Goods . . .

Tubular Goods Prices, Page 113

Boston—Pipe distributors are turning back buttweld pipe offered for February, but most seamless pipe, 12-inches and under, is being taken for next month. Tubular specialties are slow. At the warehouse level, prices are frequently 10 points off, but industrial distributors' prices are holding better.

Pittsburgh—Mills report incoming orders for February delivery equal January orders. On this basis producers forecast improvement from the present spotty level of operations. Lead time for orders in most cases is less than four weeks. Boilermakers are trimming purchases.

St Louis—Pickup in incoming pipe orders is noted but mill operations are still 18 to 20 per cent below

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Refractory Porcelain Specialties to meet specific needs can be "custom-made" by McDanel to do the job. Standard flasks, retorts, crucibles, etc., available immediately on order.

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Punches • Dies • Rivet Sets
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Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.

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capacity. A probable 80 per cent rate throughout 1954 is forecast by producers here. Jobbers' stocks are adequate but are being watched closely. Laclede Steel has added 3½ and 4-inch pipe to its line.

Seattle—The cast iron pipe market is sluggish but new inquiry is expected late this month from municipalities for spring projects. Bremerton, Wash., opened tenders for 150 tons.

Pig Iron . . .

Pig Iron Prices, Page 114

New York—Blast furnace production declined in November, totaling 6,062,600 net tons against 6,497,710 tons in October and comparing with 6,227,288 tons in November, 1952. Of the month's total output 5,999,704 tons were pig iron and 62,896 tons ferroalloys.

Production in the first 11 months of the year totaled 70,063,919 tons, of which 69,274,783 were pig iron and 789,136 ferroalloys. This compares with total output in the like period of 1952 of 55,649,055 tons, of which 55,092,529 tons were pig iron and 556,526 ferroalloys. Comparative data follow:

BLAST FURNACE OUTPUT
(Net Tons)

1953	Pig Iron	Ferroalloys	Total
Jan.	6,482,081	82,302	6,564,383
Feb.	5,813,202	68,316	5,881,518
Mar.	6,611,040	66,321	6,677,361
Apr.	6,171,939	58,702	6,230,641
May	6,519,082	68,033	6,587,115
June	6,297,559	74,972	6,372,531
1st Half	37,894,903	418,646	38,313,549
July	6,436,345	80,142	6,516,487
Aug.	6,391,749	79,805	6,471,554
Sept.	6,132,330	69,689	6,202,019
Oct.	6,419,752	77,958	6,497,710
Nov.	5,999,704	62,896	6,062,600
11 Mos.	69,274,783	789,136	70,063,919
1952			
Oct.	6,442,024	73,067	6,515,091
Nov.	6,155,565	71,723	6,227,288
11 Mos.	55,092,529	556,526	55,649,055

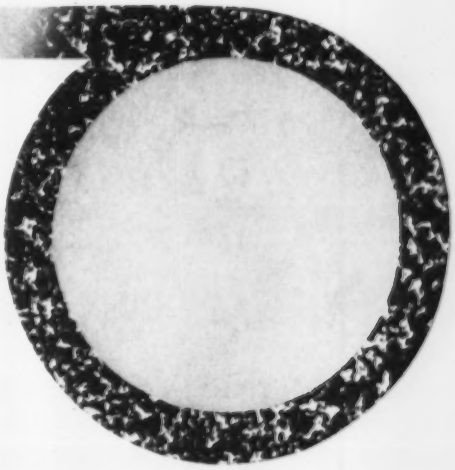
New York—Rebound in foundry operations here is resulting in a better movement of iron. Sellers anticipate a moderately active month, with further improvement likely in February and March. Consumer inventories are in fair shape and, with supply easy, there is likely to be no great pressure for iron for a while. Consumers anticipate no sharp improvement in casting demand in the near future. Gray iron shops are operating four to five days a week.

Boston—Mystic furnace prices for pig iron in first quarter are unchanged, $63 per gross ton, No. 2 foundry, Everett, Mass., with the usual differentials for silicon, phosphorus and manganese.

Since September the furnace has been operating at reduced rate to keep down inventory. Production

(*Please Turn to Page* 126)

Are your Alloy Steel Bars in the PROFIT AREA for your MACHINE TOOLS?



It's the outer rim of a Republic carbon-corrected alloy steel bar that helps you make a profit. In the ordinary heat-treated bar this is a "decarb" area that usually must be removed before parts can be made from stock. In a Republic bar, the carbon has been restored after heat treating . . . right out to the edge.

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Republic's 3-Dimension metallurgical service will be glad to show you how you can get in on such savings as these. It works with your metallurgists and production people to adapt cold-drawn carbon-corrected alloy steel bars to your product. The combined extensive experience and abilities of Republic Mill, Field and Laboratory metallurgists are added to the knowledge and skills of your engineers.

The result often means better products at reduced costs. Get in touch with your Republic Steel salesman. He can arrange for a Republic metallurgist to call at your convenience.

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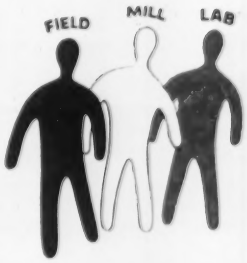

3-Dimension Metallurgical Service
combines the extensive experience and co-ordinated abilities of Republic's *Field, Mill* and *Laboratory* Metallurgists with the knowledge and skills of your own engineers. It has helped guide users of Alloy Steels in countless industries to the correct steel and its most efficient usage, IT CAN DO THE SAME FOR YOU.

Republic ALLOY STEELS

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How ACCO REGISTERED Stock Slings Save You Money—with Safety

1 • **You Get ALL the Strength You Pay For**—DUALOC* Endings insure against any loss in the catalog strength of the preformed Green Strand wire rope the sling is made of.

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4 • **These Slings and Fittings are "ACCO *Registered*"**—This assures you of highest quality and safety throughout.

Write today to our Wilkes-Barre office for name of the ACCO *Registered* Sling distributor nearest you.

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TRADE MARK

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Pig Iron . . .

(*Concluded from Page* 124)

during September-November, inclusive, was under 13,000 tons per month on which first quarter prices would normally be based. Thus June-August costs are used for contract customers.

Buffalo—Uncertainty grips the pig iron market. Blast furnace operations, however, have rebounded to 72 per cent of capacity.

Philadelphia—Some gain in the movement of pig iron is noted. This was expected as various foundries that were down for a number of days over the holidays are back to a schedule of four to five days operation. January business in iron is expected to be only fair.

Pittsburgh—The U. S. Bureau of Mines reports stocks of pig iron held by suppliers and consumers increased by 13,000 tons in October, 1953, establishing a new record high for the fourth consecutive month for this material. Total stocks at end of October were 2,255,000 tons. Consumption of pig iron increased from 5,378,000 tons in September to 5,733,000 tons in October.

Cincinnati—The first quarter trend in pig iron is not discernible. If consumption remains slow, there may be a price adjustment.

Chicago—Demand for pig iron is a bit uncertain at start of the new year. A number of foundries are just getting back into operation after yearend closing either for lack of business or for inventory-taking. And the practice of reducing inventories of raw materials continues. Stocks didn't get worked down to the desired point in December.

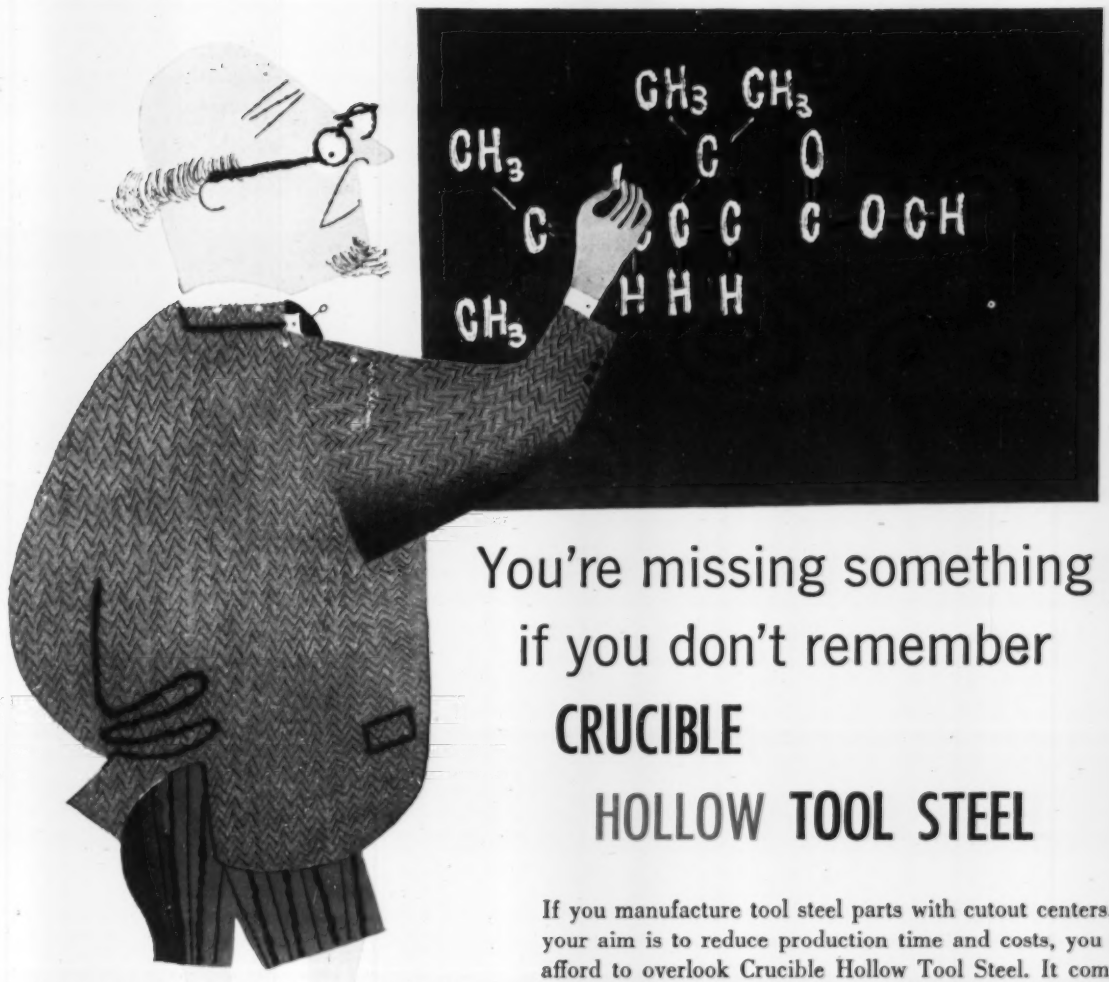
St. Louis—Granite City Steel's B blast furnace has been shut down for its first relining since 1948. The two stacks furnish 90 per cent of the area's iron. Ground stocks are ample to tide over the 90-day repair job.

Keokuk, Iowa—The Keokuk Electro-Metals Co., producer of silvery iron with electric furnaces here and at Wanatchee, Wash., reduced prices on its silvery pig iron, both regular and alloy grades, $3.50 per gross ton, effective Jan. 1. The action brings the company's prices down to 50 cents under those prevailing in December, 1950.

Denver—The four blast furnaces at the Pueblo Works of Colorado Fuel & Iron Corp. produced more than 1 million tons of pig iron in 1953, breaking all previous records, reports A. F. Franz, president.

San Francisco—Columbia-Geneva

(*Please Turn to Page* 133)



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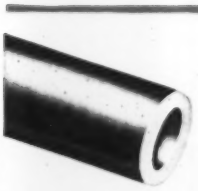
If you manufacture tool steel parts with cutout centers, and your aim is to reduce production time and costs, you can't afford to overlook Crucible Hollow Tool Steel. It comes in three famous grades: KETOS, AIRDI 150 and SANDERSON.

You don't have to drill and bore solid bars anymore. For these quality brands of tool steel are immediately available with machine-finished inside and outside diameters and faces — cut to your specific length requirements. And they come in a wide range of sizes.

By eliminating drilling and boring operations, Crucible Hollow Tool Steel will lower your production time per unit . . . increase your machine capacity . . . and reduce your scrap losses.

For full information and literature, call your nearest Crucible warehouse . . . or write for new brochure describing Crucible Hollow Tool Steel. Address Dept. S, Crucible Steel Company of America, Chrysler Building, New York, N. Y.



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54 years of Fine steelmaking

HOLLOW TOOL STEEL

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QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866
THE WHELAND COMPANY
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PICKLING ACID INHIBITORS

SAVES ACID
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SAVES MONEY

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Write for Descriptive Folder

AMERICAN CHEMICAL PAINT CO.
AMBLER, PA.

ORES—COKE—REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract 17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematite (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, min. 65%, WO_3, good commercial quality	$39-$40
Domestic scheelite, mine	63.00

Manganese Ore

Mn, 48% nearby, $1.18-$1.21 per long ton unit, c.i.f. U. S. ports, duty for buyers' account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.:

Indian and African	
48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00
South African Transvaal	
44% no ratio	$27.00-$28.00
48% no ratio	34.00-35.00
Brazilian	
44% 2.5:1 lump	nom. $32
Domestic (Rail nearest seller)	
48% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb. Mb content, mines, unpacked $1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$2.40-$2.80
65% min.	$3.40-$3.50

Vanadium Ore

Cents per lb. V_2O_5 content, deld. mills

Domestic 31.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, O., Hays, Pa., $120; Niles, O., $120; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60, Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens New England, deld.	*26.00
Chicago ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, deld.	28.12
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Buffalo, deld.	28.08
Flint, deld.	28.23
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, producing point

Phenol, 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded with nipple, unboxed f.o.b. plant)

GRAPHITE

Diam. (Inches)	Length	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5½	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100	$8.95
40, 35, 30	110	8.95
30	84	9.10
24	96	8.90
24	72, 84	9.10
20	90	8.95
20	84	9.10
17	72	9.10
17	60	9.50
14	72	9.50
14, 12, 10	60	10.30
8	60	10.55

. . . before it TALKS

. . . is the way our doctors put it—"Our chances of curing cancer are so much better when we have an opportunity to detect it *before it talks.*"

That's why we keep urging you to make a habit of having periodic health check-ups, no matter how well you may *feel* . . . check-ups that *always* include a thorough examination of the skin, mouth, lungs and rectum and, if you are a woman, the breasts and generative tract. Very often doctors can detect cancer in these areas long before the patient has noticed any symptoms in himself.

The point to remember is that most cancers are curable if properly treated before they begin to spread, or "colonize" in other parts of the body. . . For other life-saving facts about cancer, phone the American Cancer Society office nearest you or write to "Cancer"—in care of your local Post Office.

American Cancer Society

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.6c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. S M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, 4on 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, S M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr, 36-39%, Si 26-39%, Al 7-9%, C 0.05% max). 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14; less ton $1.16. Delivered. Spot, add 5c Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contact, carload, lump bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 010% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb. f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered; Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet. Packed c.l. 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.

(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c. Packed c.l. 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.10 per lb of contained W; 2000 lb W to 10,000 lb W, $4.20; less than 2000 lb W, $4.32, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max. C 0.4% max.). Contract, ton lot, 2" x D, $6.40 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max; ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%), Carload packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr. 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%), C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 14.50c. Packed c.l. 15.50c, ton lots, 15.75c, less ton lots, 16.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb. contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

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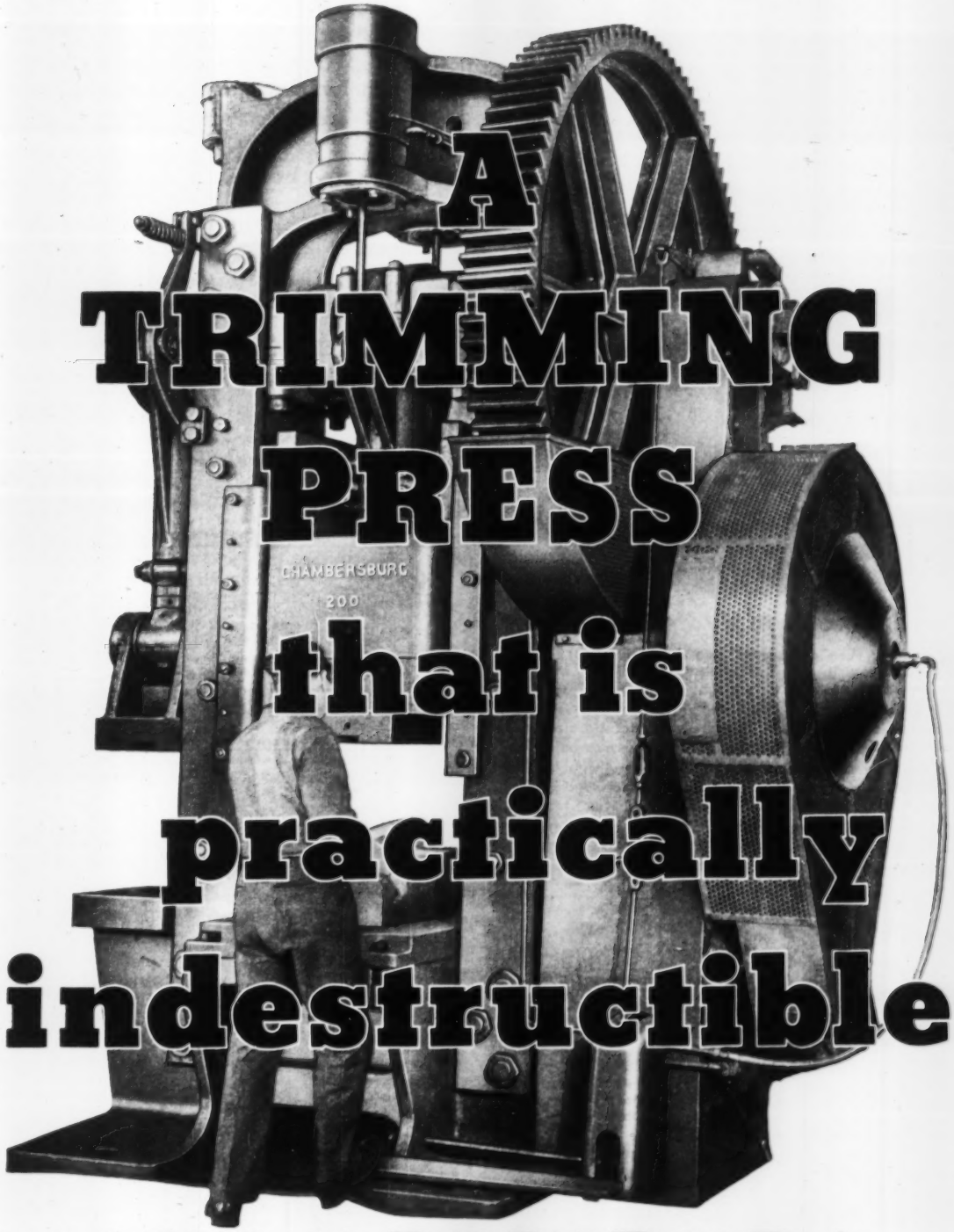

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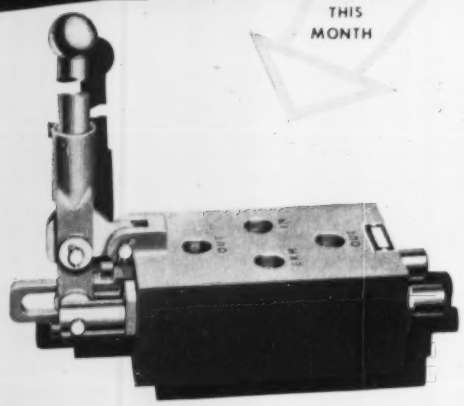

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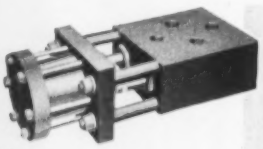

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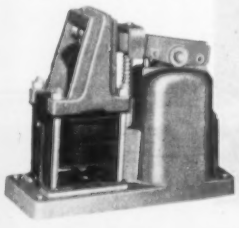

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Pig Iron . . .

(*Concluded from Page 126*)

Division, U. S. Steel Corp., has placed its two blast furnaces at Ironton, Utah, on a standby basis. Company spokesmen explain lack of customers for merchant iron produced at the works is the reason for this action.

Seattle—The foundries report normal operations for this season, shops being about 50 per cent engaged. Pig iron is plentiful, both domestic and foreign grades. Cast iron scrap supply is ample for current requirements but such material is not surplus. Recent sales of No. 1 cupola cast were reported at $35 to $37.

Scrap . . .

Scrap Prices, Page 136

Philadelphia — Profound dullness continues in scrap. Only one district mill is buying open-hearth material in any quantity and even then in limited amounts. Certain mills are not buying a pound and have no immediate plans for coming into the market. Word is around that the Fairless Works will take in nothing during January.

Consumers have substantial stocks on hand.

Prices are easier. No. 2 heavy melting is lower at $27 delivered consumer plant and No. 2 bundles at $24 to $25. No. 1 heavy melting, No. 1 bundles and No. 1 bushveling are nominally unchanged at $29 to $30 delivered, and electric furnace bundles at $30 to $31. Machine shop turnings and mixed borings and turnings also are nominally unchanged, holding at $17 to $18 and $19 to $20, respectively, although in some cases actual trading would probably result in lower prices.

Short shoveling turnings are lower at $23, structurals and plate at $22 to $23, and heavy turnings at $27. Couplers, springs and wheels are nominally easier at $25 to $26 and rail crops at $42.

Several railroad lists are pending.

Boston—Steel scrap prices are soft with new buying nil. Most consumers have taken shipments against old orders and inventories are ample. Yard activity has slowed to a walk. Foundries have resumed operations at somewhat higher rate but most lack order backlogs. One leading Boston area shop is operating five days per week, somewhat above average.

New York—Brokers have reduced buying prices on No. 1 heavy melting steel and No. 1 bundles to $21 to $22, and on No. 2 heavy melting and on No. 2 bundles to $19 to $20 and $17 to $17.50, respectively. Prices on all other grades are unchanged, although little tonnage is changing hands. This applies to the cast grades and to stainless steel scrap as well. There is little to indicate any strengthening in the situation in the near future.

Buffalo—Scrap prices fell another $1 per ton when a leading mill buyer failed to make an expected return to the market. The mill was out of the market in December also. Leading buyers of all items are remaining on the sidelines. Meanwhile the trade is looking forward anxiously for prices on railroad lists.

Pittsburgh—A leading steelmaker returned to the scrap market last week with a sizable purchase of blast furnace material. This activity lowered No. 1 heavy melting scrap to $30 to $31. Other blast furnace grades dropped slightly. Cast iron grades remained unchanged.

Youngstown — The local scrap trade is trying to fathom what will happen in the market now in view of the expiration of the excess profits tax Jan. 1 and the improved steel operations outlook. Scrap yards and steel plant storage are piled high with metal. For the last few weeks the market has been in the doldrums with virtually no material moving except for distress cars. Prices are nominal, around $27 for No. 2 bundles, and $28 to $30 for No. 1 heavy melting steel.

Cleveland—The scrap market here continues in the doldrums with consumers largely on the sidelines. Only small, token tonnages are moving and the trade anticipates little change in market conditions until next month. Meanwhile, prices are unchanged but are largely nominal. Further declines are expected before bottom is reached.

Detroit—The scrap market is inactive with little indication of an upturn in the immediate future. Inventories are still heavy and prices must be regarded nominal in the absence of sales.

Cincinnati—The local scrap market remains quiet. Prices are nominal. Some limited purchases are expected soon.

St. Louis—Scrap market shows only moderate softening despite mill disinterest in replenishing stockpiles. Brokers report collections and shipments are good in response to the few outstanding orders. They predict prices are establishing a bottom now which will continue for some time. Prices recently have dropped no more than $1 and a 60-car offering of railroad scrap by Missouri-Pacific last week failed to lower the $31 quote put on railroad melting steel a week earlier by Frisco and Cotten Belt lists.

Chicago—Light purchasing and a lower steelmaking level are depressing scrap prices further. No halt to the trend is sighted until consumption increases and the market picks up activity. This could be six weeks to two months away since all consumers hold good inventories. No. 1 heavy melting steel is bringing only $30 for industrial offerings and $28 for material from yards. Machine shop turnings have sold for $12. Little cast scrap is moving.

San Francisco—Mills have not yet made their commitments for steel scrap for January, but it is expected they will not order much tonnage. They hold large inventories and are using less than half what they were six months ago. Prices are expected to hold present levels.

Seattle—Large scrap buyers have not yet entered the market for January requirements. Prices may go lower. Last month was extremely dull for dealers who have heavy inventories. Some export feelers are reported but no definite orders have been placed in this area.

Canada . . .

Toronto—October pig iron production in Canada amounted to 265,346 net tons, comparing with 243,963 in September and 220,464 in October, 1952. In the 10 months ending October, 1953, production of pig iron totaled 2,537,100 net tons against 2,223,843 in the like 1952 period.

Production of steel ingots and castings in October totaled 362,498 net tons, comparing with 329,344 in September and 306,104 in October, 1952. For the 10 months ending October production was 3,447,336 net tons against 3,074,187 in the corresponding 10 months of 1952.

Canadian production of primary iron and steel shapes in August amounted to 372,935 net tons, including 361,601 tons of carbon and 11,334 tons of alloy steel shapes. Output for the month compares with 372,383 tons in July and with 357,252 tons in August, 1952.

Included in the production figures for August are 118,658 tons delivered under producers' interchange for further processing within producers' own plants, compared with 123,216 tons in July and 126,279 tons in August, 1952.

Shipments for sale in August amounted to 251,409 net tons, comparing with 238,597 in July and 232,669 in August, 1952.

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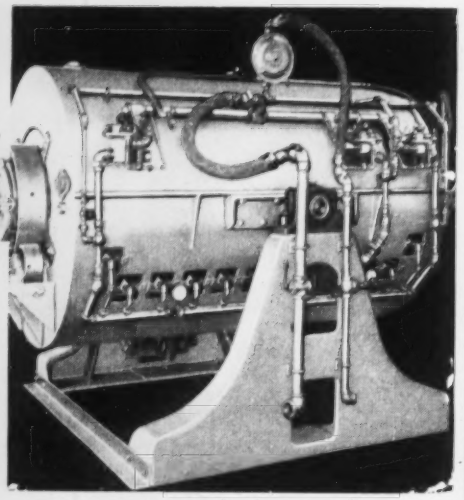

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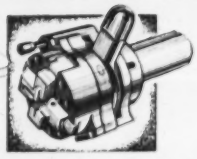

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53,526 tons went to railways and car shops; 12,461 to pressing, forming and stamping plants; 23,915 to merchant trade products; 37,016 to building construction; 26,587 to the containers industry; 8236 to agricultural equipment; 16,808 to the automotive industry; 9949 to machinery plants; 1531 to shipbuilding; 7063 to mining, lumbering, etc.; 8008 to miscellaneous industries. Wholesalers and warehousing accounted for 36,062 tons and exports for 10,247 tons.

Welland, Ont.—Branch sales managers of Atlas Steels Ltd. recently were shown equipment in the company's new continuous cold strip mill here. Described as most modern and of unique design, the installation is nearing completion and will be ready for initial commercial operation soon.

Trial rollings produced satisfactory results. Output will make unnecessary a large portion of present strip imports. Production is scheduled for first quarter and trial lot stages should be largely passed by second quarter.

Welded stainless steel tube facilities are associated with the strip mill and are expected to be placed in operation this month.

Semifinished Steel . . .

Semifinished Prices, Page 110

Youngstown — Hundreds of furloughed workmen have been recalled to their jobs and there's more pickup on the way for later in January. Last week Republic Steel Corp. started up its bessemer converters and a banked blast furnace, and started up many finishing operations. Youngstown Sheet & Tube Co.'s banked Hubbard blast furnace and the adjacent Valley Mould & Iron Corp. started up, calling back around 600 workmen in all. Sheet & Tube also restarted its besemer converters. Shenango Furnace Co., Sharpsville, Pa., started up one of its two blast furnaces. The other is down for relining. Shenango-Penn Mold Co. also resumed operations.

Tool Steel . . .

Tool Steel Prices, Page 114

Chicago—Columbia Tool Steel Co. lowered base prices on standard 18-4-1 high speed steel, effective Jan. 1. The new price of 18 per cent tungsten steel is a reduction from $1.66 per pound to $1.48 base, equal to $1 per pound reduction for the tungsten contained in the metal.

According to the company, the new price is based on the lowered world price of tungsten ore. Established world market prices are now considerably below the U. S. government price of $65 a unit currently being paid for stockpile material. Abundant supplies are available at lower figures and the government price is considered as no longer representing the true market.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

605 tons, temporary railroad trestle, Winchester, Mass., to Bethlehem Steel Co., Bethlehem, Pa., through Berke-Moore Co., Boston, general contractor.

600 tons, Army warehouse, Ft. Richardson, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Lewis & Schmidt, Seattle, general contractors.

460 tons, four state bridges, Boston-Fall River expressway, Brockton-West Bridgewater section, to Tower Iron Works, Providence, R.I., through Consolidated Constructors Inc., subcontractor for structures; previously reported going to another shop.

300 tons, Central junior high school, Weymouth, Mass., to Groisser & Shlager Iron Works, Somerville, Mass.; Concrete Construction Co., Chelsea, Mass., general contractor.

200 tons, miscellaneous construction, Hanford Works, to Pacific Car & Foundry Co., Seattle; general contract to Sound Construction & Engineering Co., Seattle, low, $196,179.

160 tons, state highway bridge, Mid-Cape Cod highway, Barnstable-Yarmouth, Mass., section, to Tower Iron Works, Providence, R.I.; S. & M. Construction Co., Providence, general contractor.

140 tons, plant extension, Standard Steel Works, Burnham, Pa., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

100 tons, hoists, appurtenances, etc., intake gates, Dexter dam, Oregon, to Berger Engineering Co., Seattle, low $32,458, to U. S. Engineer, Portland, Oreg.

STRUCTURAL STEEL PENDING

12,000 tons, floor structure, contract 6, Philadelphia-Gloucester bridge, Delaware River Port Authority, Camden, N. J., closes bids Feb. 11.

2500 tons, The Dalles dam, Columbia river; bids in to U. S. Engineer, Portland, Oreg.

950 tons, boilers and turbine laboratory, Navy Yard, Philadelphia, bids postponed to Jan. 22.

750 tons, state bridges, Buckland-Charlemont, Mass.; bids Jan. 26, Boston.

350 tons, hangar, Army Air Base, Niagara Falls, N. Y., bids closed Jan. 6.

250 tons, two state bridges, rotary, route 5, Agawam-West Springfield, Mass.; bids Jan. 19, Boston.

187 tons, state bridge work, Franklin county, Pennsylvania, bids Jan. 26.

140 tons, two anchorage superstructures, contract 3, Philadelphia-Gloucester bridge, Delaware River Port Authority, Camden, N. J., closes bids Jan. 13.

130 tons, angles, Navy, east and west yards; bids Jan. 13, Washington.

100 tons, Hanford Works, construction, bids in.

Unstated, port of Seattle air cargo building; general award to Burien Construction Co., Seattle, $114,000.

Unstated, $2 million hospital project, Fairchild Field, Washington state; bids to U. S. Engineer, Seattle, late January.

Unstated, string dead-end assemblies, bids to Bonneville Power Administration, Portland, Oreg., Jan. 6; schedule No. 7233.

Unstated, seven items tower steel; bids to Bonneville Power Administration, Portland, Oreg., Jan. 6; schedule No. 7222.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1200 tons, First Ave. south bridge, Seattle, to Steel Fabricators, Castroville, Calif.; General Construction Co., Seattle, general contractor.

800 tons, state bridges and highway, Agawam-West Springfield, Mass., to Northern Steel Co., Boston, through Daniel O'Connell Sons Co., Holyoke, Mass., general contractor.

600 tons, foundation and piers, state highway bridge, New York thruway, Herkimer county, to Jones & Laughlin Steel Corp., Pittsburgh; the Westcott Construction Co., North Attleboro, Mass., general contractor.

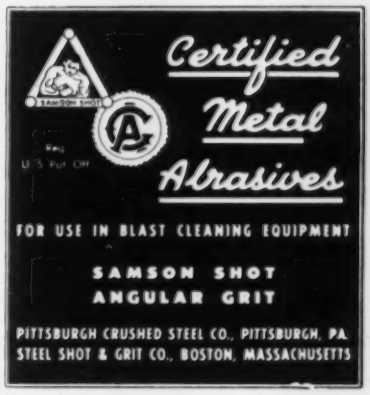
425 tons, state highway bridges, route 128, Needham-Wellesley, Mass., to Truscon Steel Division, Republic Steel Corp., Boston, through M. DeMatteo Construction Co., Quincy, Mass., general contractor.

390 tons, three state bridges, Billerica-Chelmsford, Mass., to Truscon Steel Division, Republic Steel Corp., Boston; Monroe-Langstroth, Inc., Norwood, Mass., subcontractor for structures for G. Rotundi & Sons, Melrose, Mass., general contractors.

225 tons, state highway bridge, Billerica, Mass., to Northern Steel Co., Boston; Coleman Bros. Co, Boston, general contractor.

200 tons, Central junior high school, Weymouth, Mass., to Northern Steel Co., Boston; Concrete Construction Co., Chelsea, Mass., general contractor.

150 tons, dormitory, Mt. Holyoke College, Holyoke, Mass., to Bethlehem Steel Co., Bethlehem, Pa., through George H. Macomber Co., Boston, general contractor.



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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Jan. 7	$29.67
Dec. 31	30.83
Dec. Avg.	32.10
Jan. 1953	43.00
Jan. 1949	41.54

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	*$0.00-$1.00*
No. 2 heavy melting	*27.00-28.00*
No. 1 bundles	*$0.00-$1.00*
No. 2 bundles	*25.00-26.00*
No. 1 busheling	*$0.00-$1.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, turnings	19.00-20.00
Short shovel turnings	*20.00-21.00*
Cast iron borings	20.00-21.00
Cut structurals	36.00-37.00
Heavy turnings	30.00-31.00
Punchings & plate scrap	*$1.00-$5.00*
Electric furnace bundles	36.00-37.00

Cast Iron Grades

No. 1 cupola	36.00-37.00
Charging box cast	35.00-36.00
Heavy breakable cast	*$2.00-$3.00*
Unstripped motor blocks	*24.00-25.00*
No. 1 machinery cast	44.00-45.00

Railroad Scrap

No. 1 R.R. heavy melt.	*$3.00-$4.00*
Rails, 2-ft. and under	46.00-47.00
Rails, 18-in. and under	47.00-48.00
Rails, random lengths	39.00-40.00
Railroad specialties	37.00-38.00

Stainless Steel Scrap

(F.o.b. shipping point)

18-8 bundles & solids	165.00-170.00
18-8 turnings	85.00-90.00
430 bundles & solids	85.00-87.00
430 turnings	60.00-62.00

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	28.00-29.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	28.00-29.00
No. 2 bundles	23.00-24.00
No. 1 busheling	28.00-29.00
Machine shop turnings	14.00-15.00
Mixed borings, turnings	18.00-19.00
Short shovel turnings	18.00-19.00
Cast iron borings	18.00-19.00
Low phos.	30.00-31.00
Alloy free, short shovel turnings	21.00-22.00
Electric furnace bundles	30.00-31.00

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	29.00-30.00
Stove plate	36.00-37.00
Heavy breakable cast	25.00-26.00
Unstripped motor blocks	24.00-25.00
Brake shoes	33.00-34.00
Clean auto cast	43.00-44.00
No. 1 wheels	39.00-40.00
Burnt cast	30.50-31.50
Drop broken machinery	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt	31.00-32.00
R.R. malleable	*42.00-43.00*
Rails, 2-ft. and under	*43.00-44.00*
Rails, 18 in. and under	*45.00-46.00*
Rails, random lengths	*38.00-39.00*
Cast steel	*35.00-36.00*
Railroad specialties	*35.00-36.00*
Uncut tires	*37.00-38.00*
Angles, splice bars	*41.00-42.00*
Rails, rerolling	*42.00-43.00*

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	nom. 50.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	29.00-30.00
No. 2 bundles	27.00-28.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos.	31.00-32.00
Electric furnace bundles	31.00-32.00

Railroad Scrap

No. 1 R.R. heavy melt	31.00-32.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	*27.00*
No. 1 bundles	29.00-30.00
No. 2 bundles	*24.00-25.00*
No. 1 busheling	29.00-30.00
Electric furnace bundles	*30.00-31.00*
Machine shop turnings	17.00-18.00
Mixed borings, turnings	19.00-20.00
Short shovel turnings	*24.00*
Structurals & plate	*22.00-23.00*
Heavy turnings	*27.00*
Couplers, springs, wheels	*25.00-26.00*
Rail crops, 2 ft & under	*42.00*

Cast Iron Grades

No. 1 cupola	33.00-35.00
Heavy breakable cast	36.00-37.00
Unstripped motor blocks	28.00
Drop broken machinery	*40.00*

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*21.00-22.00*
No. 2 heavy melting	*19.00-20.00*
No. 1 bundles	*21.00-22.00*
No. 2 bundles	*17.00-17.50*
Machine shop turnings	9.00-10.00
Mixed borings, short turnings	12.00-13.00
Low phos. (structural & plate)	26.00-27.00
Short shovel turnings	13.00-14.00

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	21.00-22.00

Stainless Steel

18-8 sheets, clips, solids	160.00-165.00
18-8 borings, turnings	85.00-90.00
430 sheets, clips, solids	75.00-80.00
410 sheets, clips, solids	65.00-70.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*19.50-20.50*
No. 2 heavy melting	*15.50-16.50*
No. 1 bundles	*19.50-20.50*
No. 2 bundles	*16.00-17.00*
Machine shop turnings	*8.50-9.00*
Mixed borings, turnings	*9.00-9.50*
Short shovel turnings	*12.00-13.00*
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	36.00-37.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*26.00-27.00*
No. 2 heavy melting	*23.00-24.00*
No. 1 bundles	*26.00-27.00*
No. 2 bundles	*20.00-21.00*
No. 1 busheling	*26.00-27.00*
Machine shop turnings	12.00-13.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Cast iron borings	15.00-16.00
Low phos., 18-in.	35.00-36.00

Cast Iron Grades

No. 1 cupola	37.00
Heavy breakable cast	34.00
Charging box cast	34.00
Drop broken machinery	44.00

Railroad Scrap

No. 1 R.R., heavy melt.	30.00-31.00
Malleable	38.00-39.00
Rails, 18-in. and under	44.00-45.00
Rails, random lengths	36.00-37.00

CHICAGO

No. 1 heavy melting	*28.00-30.00*
No. 2 heavy melting	*23.00-24.00*
No. 1 factory bundles	*$1.00-$2.00*
No. 1 dealer bundles	*27.00-28.00*
No. 2 bundles	*21.00-23.00*
No. 1 busheling	*28.00-30.00*
Machine shop turnings	*11.00-12.00*
Mixed borings, turnings	*11.00-12.00*
Short shovel turnings	*13.00-14.00*
Cast iron borings	*13.00-14.00*
Cut structurals, 3-ft	*$2.00-$3.00*
Punchings & plate scrap	*$3.00-$4.00*
Electric furnace bundles	33.00-34.00

Cast Iron Grades

No. 1 cupola	32.00-33.00
Stove plate	26.00-27.00
Unstripped motor blocks	19.00-20.00
Clean auto cast	*$6.00-$7.00*
Drop broken machinery	36.00-37.00

Railroad Scrap

No. 1 R.R. heavy melt	*$2.00-$3.00*
R.R. malleable	39.00-40.00
Rails, 2-ft. and under	*$3.00-$4.00*
Rails, 18-in. and under	*$4.00-$5.00*
Angles, splice bars	38.00-39.00
Rails, rerolling	*$9.00-$10.00*

Stainless Steel Scrap

18-8 clips & solids	140.00-150.00
18-8 turnings	nom. 60.00
430 clips & solids	60.00
430 turnings	nom. 30.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*24.00*
No. 2 heavy melting	*18.50*
No. 1 bundles	*24.00*
No. 2 bundles	*17.50*
No. 1 busheling	*24.00*
Machine shop turnings	*10.00*
Mixed borings, turnings	*10.00*
Short shovel turnings	*14.00*
Punchings & plate scrap	*24.00*

Cast Iron Grades

No. 1 cupola	*35.00*
Charging box cast	*35.00*
Stove plate	*28.00*
Heavy breakable	*35.00*
Unstripped motor blocks	*18.00*
Clean auto cast	*37.00*
Malleable	*37.00*

BUFFALO

No. 1 heavy melting	*27.00-28.00*
No. 2 heavy melting	*24.00-24.50*
No. 1 bundles	*27.00-28.00*
No. 2 bundles	*22.00-22.50*
No. 1 busheling	*27.00-28.00*
Machine shop turnings	*14.50-15.50*
Mixed borings, turnings	*16.50-17.00*
Short shovel turnings	*17.50-18.00*
Cast iron borings	*16.50-17.00*
Low phos.	*$1.00-$2.00*

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*$0.00-$1.00*
No. 1 machinery	*$5.00-$6.00*

Railroad Scrap

Rails, random lengths	*$4.00-$5.00*
Rails, 2 ft and under	*$9.00-$10.00*
Railroad specialties	*$7.00-$8.00*

BIRMINGHAM

No. 1 heavy melting	26.00-26.50
No. 2 heavy melting	24.00-24.50
No. 1 bundles	26.00-26.50
No. 2 bundles	22.00-22.50
Cast iron borings	21.00-22.00
Short shovel turnings	20.50-21.50
Machine shop turnings	19.00
Cut structurals	nom.
Electric furnace bundles	nom.

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00-42.50
Charging box cast	30.00-31.00
Stove plate	38.00-39.00
Bar crops and plate	38.00-39.00
Cut structurals	36.00-37.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	nom.
Rails, 2-ft. and under	42.00-43.00
Rails, random lengths	39.00-40.00
Angles, splice bars	38.00-39.00
Rails, rerolling	46.00-47.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*27.00*
No. 2 heavy melting	*25.00*
No. 1 bundles	*27.00*
No. 2 bundles	*22.00*
Machine shop turnings	*11.00*
Short shovel turnings	*12.00*

Cast Iron Grades

No. 1 cupola	*38.00*
Charging box cast	*27.00*
Heavy breakable cast	*27.00*
Unstripped motor blocks	*27.00*
Brake shoes	*36.00*
Clean auto cast	*39.00*
Burnt cast	*26.00*

Railroad Scrap

No. 1 R.R. heavy melt.	31.00
Rails, 18-in. and under	*43.00*
Rails, random lengths	*$6.00-$7.00*
Rails, rerolling	*40.00-41.00*
Uncut tires	30.00-31.00
Angles, splice bars	*$4.00-$5.00*

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	27.00
No. 2 heavy melting	23.00
No. 1 bundles	24.00
No. 2 bundles	19.00
No. 3 bundles	15.00
Machine shop turnings	12.00
Mixed borings, turnings	12.00
Short shovel turnings	12.00
Electric furnace, No. 1	36.00-38.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*$5.00-$7.00*
Heavy breakable cast	25.00-32.00
Unstripped motor blocks	23.00
No. 1 wheels	38.00-40.00
Stove plate	29.00

Railroad Scrap

(Delivered consumer plant)

Rails, random lengths	30.00-34.00

SAN FRANCISCO

No. 1 heavy melting	23.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
No. 1 busheling	24.00
Machine shop turnings	7.00
Mixed borings, turnings	7.00
Short shovel turnings	11.00
Cast iron borings	11.00
Cut structurals	28.00
Heavy turnings	11.00
Punchings & plate scrap	28.00
Electric furnace bundles	22.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	29.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

LOS ANGELES

No. 1 heavy melting	23.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
Machine shop turnings	7.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	40.00-41.00

HAMILTON, ONT.

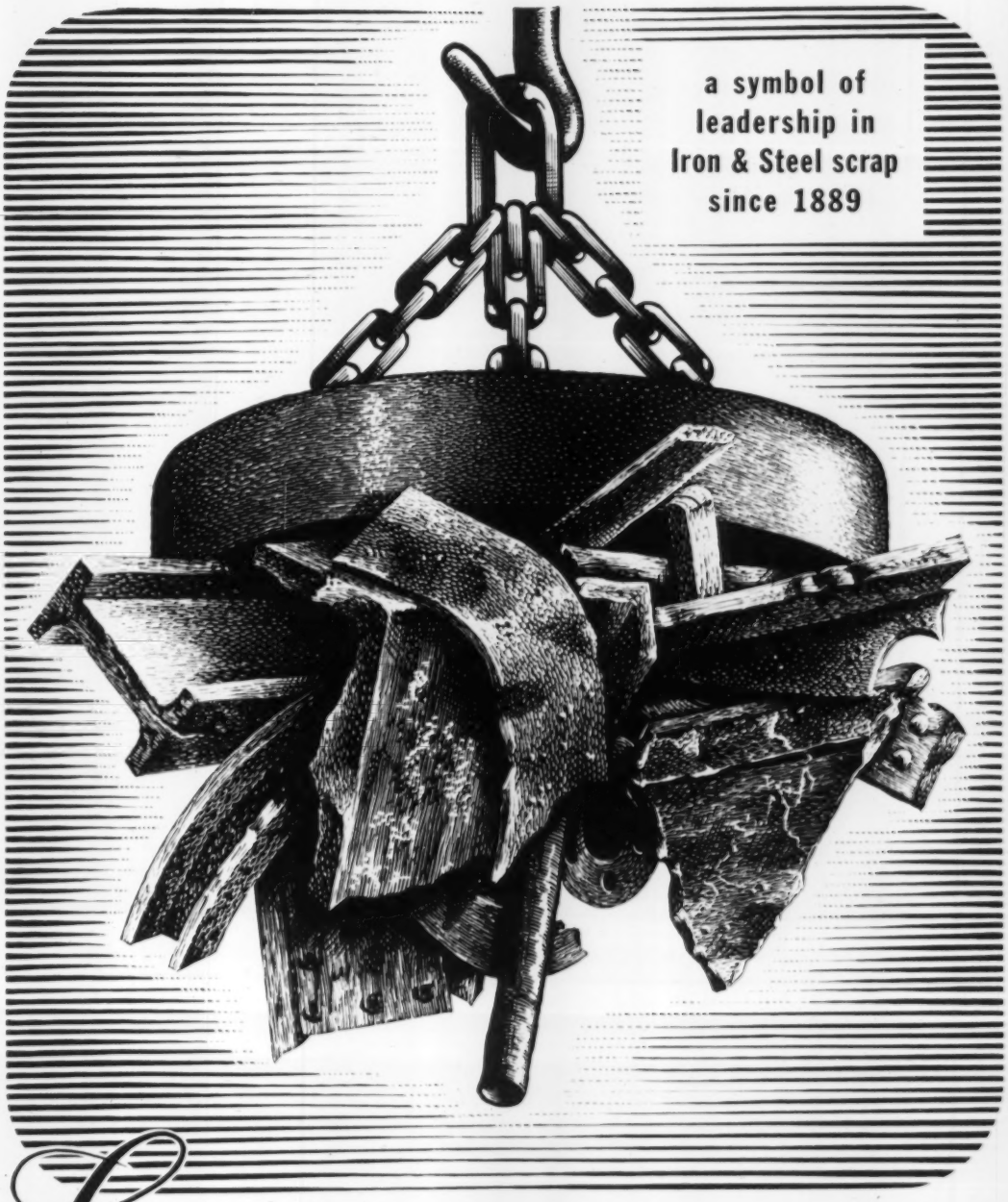
(Delivered prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.00
Mechanical bundles	30.50
Mixed steel scrap	28.50
Mixed borings, turnings	20.00
Rails, remelting	32.50
Rails, rerolling	41.50
Busheling	26.50
Busheling new factory:	
Prep'd	30.50
Unprep'd	28.50
Short steel turnings	20.00

Cast Iron Grades†

No. 1 machinery cast	46.00

†F.o.b., shipping point.



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ner Co., Boston, general contractor.

REINFORCING BARS PENDING

17,000 tons, The Dalles dam, Columbia river; Guy F. Atkinson Co. and Ostrander Construction Co., Portland, Oreg., joint low $18,886,006 to U. S. Engineer, Portland, Oreg.

200 tons, Fairbanks, Alaska, high school; Boen & Koon, Egge & Cummins, Seattle, recommended for award at $2,215,000 by Alaska Public Works.

200 tons, Washington state highway work; bids to Olympia, Wash., Jan. 12.

100 ton, including shapes, railroad bridge relocation, The Dalles dam project; Louis Eiterich Co., Port Angeles, Wash., low $152,545 to U. S. Engineer, Portland, Oreg.

Unstated, 690-ft Montana state bridge, Broadwater county; base award to W. P. Roscoe Co., Billings, Mont., low $375,749. Shapes also involved.

Unstated, Washington state office building, Olympia; MacDonald Bldg. Co., Tacoma, Wash., low $1,749,664.

PLATES . . .

PLATES PLACED

10,000 tons, storage tanks for Shell Oil Co. refinery, Anacortes, Wash., to Chicago Bridge & Iron Co., Seattle.

2850 tons, sheet steel piling, government furnished, The Dalles dam, Oregon; general construction bids in.

450 tons, 6320 feet 24-inches steel pipe; bids to Spokane, Wash., Jan. 14.

105 tons, fuel storage tanks, Lincoln Air Field Base, Nebraska, to Chicago Bridge & Iron Co., Chicago, Corps of Engineers, Omaha, Nebr.

100 tons plus, storage tanks for Seattle Tidewater Oil Co. terminal, Seattle; bids in.

Unstated, steel storage reservoir, 3.2 million gallons; bids to Spokane, Wash., Jan. 14.

PLATES PENDING

350 tons, bulk fuel storage tanks, four 20,000-barrel, Abilene Airfield Base, Texas; bids Jan. 12, Corps of Engineers, Ft. Worth, Tex.

150 tons, 415,000-gal. steel water storage reservoir, Ft. Meade, Maryland; bids Jan. 19, Corps of Engineers, Baltimore.

125 tons, elevated 300,000-gal. water tank, veterans' hospital, Columbia, S. C.; bids Feb. 9, Veterans' Administration, Washington.

Unstated, 500 feet of 84-inch welded steel penstock, ⅝-inch thick, also trashracks and other items; bids to Frances Lavrita, city clerk, Centralia, Wash., Jan. 19. Addition to municipal power plant; Carey & Kramer, Seattle, engineers.

PIPE . . .

CAST IRON PIPE PENDING

150 tons, 16 to 8-inch; bids in at Bremerton, Wash., Dec. 28.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Baltimore & Ohio, six 1200-hp diesel switching units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

Toronto, Hamilton & Buffalo, three 1750-hp diesel passenger units, to General Motors Diesel Ltd., Hamilton, Ont.

Union Pacific, 205 diesel electric locomotive units, to Electro-Motive Division, General Motors Corp., La Grange, Ill.; order comprises 190 freight and 15 passenger locomotives.

RAILROAD CARS PLACED

Canadian National, 57 passenger coaches, to Canadian Car & Foundry Co., Montreal, Que.

Scrap Exports Revealed

Iron and steel scrap licensed for export from continental U. S. under the new open-end policy, which pertained to the fourth quarter of 1953 only, amounted to 93,034 tons of all grades up to Dec. 10, the Bureau of Foreign Commerce says.

With the exception of the 3660 tons shipped to Mexico, the entire tonnage was licensed for export to Japan. License applications were supported by certificates of inspection from independent agencies.

Good Connections for 1954

Its close connection with the home construction industry, which is expected to have a relatively good year in 1954, means generally good business for the cast iron soil pipe industry, says Homer E. Robertson, executive vice president, Cast Iron Soil Pipe Institute.

Building activity in 1954 will be supported by the formation of new families, destruction of old buildings, availability of mortgage money and the general employment level.

Housing demand will be bolstered by both single and married returning servicemen. They and others will purchase homes that will either increase the number of residences or replace those destroyed during the year.

After a temporary shortage in the latter part of 1953, ample mortgage money will again facilitate transactions. The generally high employment level will generate an active demand for housing.

Dilemma in Titanium

"Should the government hold back on titanium expansion until a new low-cost production process is developed or should it press forth immediately with present techniques?" That question, which concerns jet engine production, will be determined when a titanium czar and his committee are appointed by the Office of Defense Mobilization.

Athur H. Flemming, ODM chief, believes that a good, hard-driving fellow could work out a program within 90 or 120 days.

Present plans for titanium expansion call for 25,000 tons of capacity and so far the General Services Administration has contracted for only half of that goal. However, Dr. Flemming has authorized GSA, after having secured the prior approval of ODM, to negotiate contracts over and above the limit.

CLASSIFIED

Positions Wanted

SALES ENGINEER REGISTERED PROFESSIONAL DESIRES FACTORY REPRESENTATION OF CAPITAL EQUIPMENT W. PA., N. W. VA., E. OHIO TERRITORIES. ADMINISTRATIVE ENGINEERING AND SALES EXPERIENCE. REPLY P.O. BOX 804, PITTSBURGH.

PLANT OR PRODUCTION MANAGER. Experience covers all phases of plant operation and control, including, costs, methods improvement, incentives and labor relations. M.I.T. graduate. Reply Box 868, STEEL, Penton Bldg., Cleveland 13, Ohio.

Position wanted as drop forge die room foreman 30 years experience in all phases of forge operations including drop, steam, presses, and upsetters. 10 years supervisory experience. Can furnish excellent reference. Reply Box 887, STEEL, Penton Bldg., Cleveland 13, Ohio.

STRUCTURAL SHOP SUPERINTENDENT College man thoroughly experienced in all phases of operation desires similar position in small or medium size shop. Southwest or foreign employment preferred. Reply Box 891, STEEL, Penton Building, Cleveland 13, Ohio.

PLANT MANAGER 20 years' experience in Plant Management, Production Control, Manufacturing Development. Could invest. Age 45, married, family. Reply Box 890, STEEL, Penton Building, Cleveland 13, Ohio.

INDUSTRIAL SALESMAN, 39, Pittsburgh Tri-State District sales twelve years. Wide acquaintance general industrial, steel, coal companies. Also industrial distributors. Engineering background. Desires opportunity $8,000-$10,000. Reply Box 894, STEEL, Penton Building, Cleveland 13, Ohio.

Help Wanted

FOUNDRY METALLURGIST required with experience in cast iron foundry practice. Prepared to travel. State age, experience, and salary required. Reply Box 892, STEEL, Penton Building, Cleveland 13, Ohio.

WANTED a technologist experienced in cast iron and foundry practice. Prepared to travel. State salary required and full qualifications. Reply Box 893, STEEL, Penton Building, Cleveland 13, Ohio.

YOUNG EX-G.I. WANTING TO GET INTO SALES—This may be an opportunity for a young man wanting to break into sales work. Should be mechanically inclined, willing to combine missionary work along with sales. Replies held confidential. Write Box 866, STEEL, Penton Building, Cleveland 13, Ohio.

WANTED: Young man wanted for top managerial Sales position in California with large tubular steel products plant. Experience in large tubular steel products required, together with exceptional ability. Salary open. Please send qualifications. All replies will be kept strictly confidential. Reply Box 889, STEEL, Penton Building, Cleveland 13, Ohio.

Opportunities

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Advertising Index

Abrasive Products, Inc. 87
Ajax Engineering Corporation 104
Allied Research Products, Inc. 102
Allison Co., The 123
Alloy Steel Division, Republic Steel Corporation 125
American Air Filter Co., Inc. 121
American Chain & Cable, Wire Rope Sling Department 126
American Chemical Paint Co. 128
American Gas Furnace Co. 134
American Wheelabrator & Equipment Corporation 63
Armco Steel Corporation 23

Babcock & Wilcox Co., The, Tubular Products Division Inside Front Cover
Bethlehem Pacific Coast Steel Corporation 1
Bixby, R. W., Inc. 138
Bristol Brass Corporation, The 109
British Columbia Department of Trade & Industry 134
Bullard Co., The 18, 19

Cadman, A. W., Mfg. Co. 132
Carpenter Steel Co., The 119
Central Steel & Wire Co. 17
Chambersburg Engineering Co. 131
Chase Brass & Copper Co. 79
Cincinnati Shaper Co., The 13
Clemson Bros., Inc. 16
Cleveland Steel Tool Co., The 132
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division 55
Crucible Steel Company of America 127

Dempster Brothers 84
Detroit Stamping Co. 134
Diamond Mfg. Co. 134
Dulien Steel Products, Inc. 139

Eastern Machine Screw Corporation, The 134
Electric Controller & Mfg. Co., The 24
Electric Equipment Co. 139
Eureka Fire Brick Works 135
Ex-Cell-O Corporation 4, 5

Farval Corporation, The Inside Back Cover
Fischer Special Mfg. Co. 97
Foster, Frank B., Inc. 139

Galland-Henning Mfg. Co. 80
Giddings & Lewis Machine Tool Co. 98, 99
Great Lakes Steel Corporation 7

Harnischfeger Corporation, Overhead Crane Division 122
Heresite & Chemical Co. 42
Hinde & Dauch 10
Hobart Brothers Co. 3
Holmes, Robt., & Bros., Inc. 139
Hunt, C. B., & Son, Inc. 132
Hyatt Bearings Division, General Motors Corporation 38

International Nickel Co., Inc., The 20
Iron & Steel Products, Inc. 139

Jones & Lamson Machine Co. 68

Kaiser Aluminum & Chemical Sales, Inc., Chemical Division 88, 89
Kaiser Engineers Division of Henry J. Kaiser Co. 6
Kewanee-Ross Corporation 27

Latrobe Steel Co. 11
Link-Belt Co. 60
Lord Baltimore Hotel 135
Lurie Brothers & Co., Inc. 137

McDanel Refractory Porcelain Co. 124

Marchant, Geo. F., Co. 124
Marvellum Co., The 49
Morgan Construction Co. 37
Morse Twist Drill & Machine Co. 58, 59
Murray, A. B., Co., Inc. 120

National Acme Co., The 67
National Steel Corporation 7
New Departure, Division of General Motors 45
Niagara Blower Co. 12
Norton Co. 115
Norton Co., Machine Division 8, 9

Ohio Locomotive Crane Co., The 134
Ohio Steel Foundry Co., The 50

Phillips Petroleum Co. 2
Pittsburgh Crushed Steel Co. 135

Reeves Instrument Corporation 139
Republic Steel Corporation, Alloy Steel Division 125
Reynolds Metals Co. 91
Roebling's, John A., Sons Corporation 103

Stamco, Inc. 132
Standard Pressed Steel Co. 14
Steel City Testing Machines, Inc. 96
Steel Shot & Grit Co. 135
Superior Tube Co. 53

Tannewitz Works, The 139
Timken Roller Bearing Co., The, Steel & Tube Division 46
Torrington Co., The 95

Upson-Walton Co., The 140

Wean Engineering Co., Inc., The Back Cover
Wheland Co., The 128
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 55
Wittek Manufacturing Co. 120

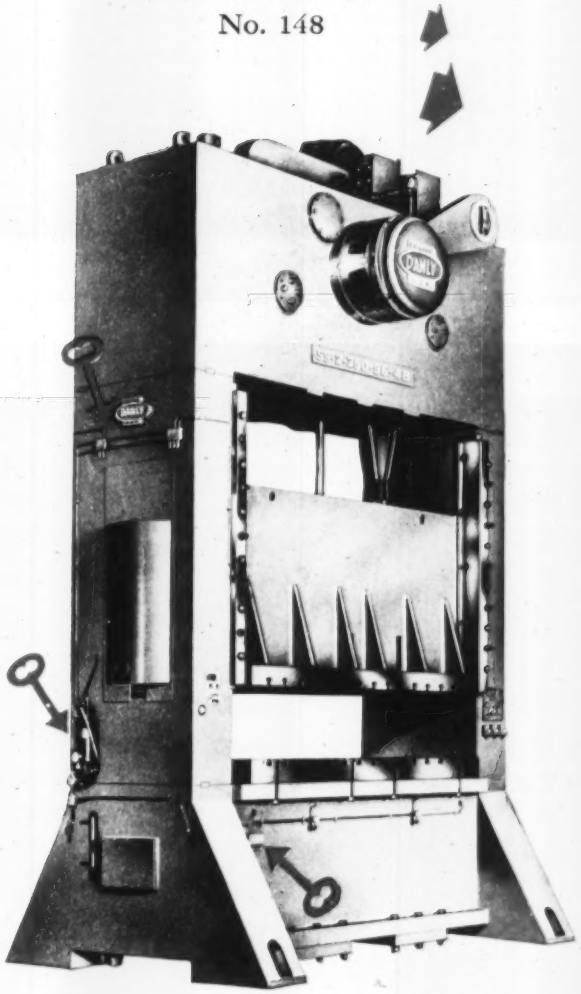
Yoder Co., The 15
Youngstown Sheet & Tube Co., The 28

Table of Contents, Page 5

Classified Advertising, Pages 138, 139

Farval—*Studies in Centralized Lubrication*
No. 148

Farval lubricates slide gibs and cushion guides on Danly 250-ton press



KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings. In the photograph above, you can see part of the Farval manual system on the left side of the 250-ton Danly press.

STOP a press for needed lubrication and productive minutes are wasted. Dollars are lost! But this Danly 250-ton press never takes lubrication "breaks". It's equipped with a Farval system of centralized lubrication which delivers grease to the slide gibs and cushion guides. This makes it a matter of seconds for the press operator to give his equipment the lubrication it needs while the press is in operation.

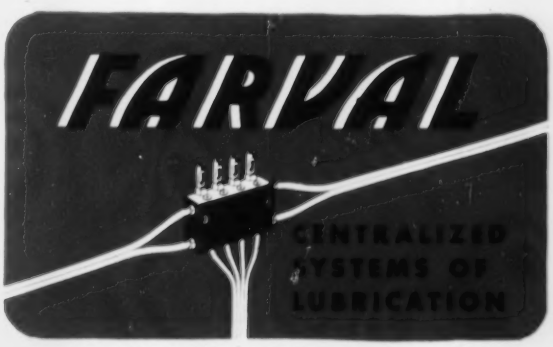
The Farval manual pumping station is easily installed at any convenient place on any machine. A few strokes of the handle and all bearings on the system are immediately lubricated—none missed regardless of location.

Farval is the original Dualine system of centralized lubrication for industrial equipment, proved practical in over 25 years of service. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Through its full hydraulic operation, the Farval system unfailingly delivers oil or grease to each bearing—as much as you want, exactly measured—as often as desired. Indicators at all bearings show that each valve has functioned.

Many users report that Farval saves up to 45 minutes out of every hour of oiling labor—3 out of every 4 pounds of lubricant used by other methods.

In or near your city there's a Farval engineer, ready to discuss your lubrication problems and suggest a proper system to meet your particular needs. Phone him, or write for Bulletin 26. The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



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